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UNDER THE SUPERINTENDENCE OF THE
SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE

A

STATISTICAL ACCOUNT

OF

THE BRITISH EMPIRE:

EXHIBITING

ITS EXTENT, PHYSICAL CAPACITIES, POPULATION,
INDUSTRY,
AND
CIVIL AND RELIGIOUS INSTITUTIONS.

BY J.ohn R.amsay McCULLOCH, ESQ.

ASSISTED BY NUMEROUS CONTRIBUTORS.

Second Edition,

CORRECTED THROUGHOUT AND ENLARGED.

IN TWO VOLUMES.

VOL. I.

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ADVERTISEMENT

TO THE SECOND EDITION.

This edition has been carefully revised; no pains having been spared to correct the errors that had crept into the former edition; to supply its deficiencies; and to render the work more complete, and worthy of the public patronage. The article on Prison Discipline in this edition has been contributed by William Crawford, Esq., Inspector of Prisons; the article on the Constitution and Courts of Law has been carefully revised by Edward Smirke, Esq., Barrister at Law; Mr. Coode has nearly re-written the article on the Poor Laws; and Mr. Farr has made large additions to his elaborate and excellent article on Vital Statistics. On the whole, it is believed that the work will be found to be materially improved; and that if it do not fully attain, it at all events comes considerably nearer the object of its projectors, in presenting a pretty accurate view of the present state and resources of the British Empire.

April 20th, 1839.

2739

PREFACE

TO THE FIRST EDITION.

It has long been matter of surprise and regret to many, that there should be no modern work developing, within a moderate compass, the physical capacities, population, industry, and institutions of the British empire. The latest work of the kind that has attracted any notice is the State of Great Britain and Ireland, by Chamberlayne, the last edition of which was published so far back as the reign of George II. But, though this once popular publication contains a good deal of useful information, it is not written on any scientific plan, or with any considerable discrimination; while the change of circumstances, since the peace of Paris in 1763, would have rendered it, how good soever it might originally have been, quite obsolete for many years past. The want of any separate publication on the state of the empire has been but indifferently supplied by the notices of it in other works. Speaking generally, geographical science in this country has been, until very recently, at the lowest ebb, while, during the long interval between Sir William Petty and Dr. Beeke, statistical science could hardly be said to exist. Hence the accounts of Great Britain and Ireland, given in our Encyclopædias and geographical works, are, for the most part, very meager and defective. The article on England in the *Edinburgh Encyclopædia*, written by the late William Stevenson, Esq., Librarian to the Treasury, is undoubtedly the best of this class of publications. The space allotted to it was, however, too confined; so that some very important subjects, such as those relating to population, education, the poor, revenue and expenditure, army and navy, &c., are disposed of in the briefest and most unsatisfactory manner. The accounts of agriculture and manufactures are the best parts of the article, and are superior to any that had appeared when it was printed in 1815.

Since this æra a number of detached treatises of various merit have been published on different branches of industry; and our political, commercial, and financial systems have been subjected not only to a more thorough examination than they had previously undergone, but to many important changes. Much valuable information has also been acquired under the acts for taking the census in 1821 and 1831, and there are few departments that have not been made the subject of investigation by parliamentary committees, or by commissions appointed by the Crown. A vast mass of materials has consequently been collected that may be employed to illustrate the statistics of the empire; and the time seemed to be at length arrived when it might be attempted to compile a work that should give a pretty fair representation of the present condition of the United Kingdom.

Influenced by this feeling, the Editor and principal author of this work submitted, some years ago, a proposal to the Society for the Diffusion of Useful Knowledge for the drawing up a statistical account of the British empire. The Society readily and liberally agreed to it; and the work now before the reader is the fruit of that arrangement.

The Editor has endeavoured, with what success the public will judge, to make the work generally interesting and instructive. To have confined it, as some suggested, to mere statements of results, or to the detail of such information as might have been mostly thrown into a tabular form, would have made it unreadable, and destroyed its utility. The plan that has been followed is nearly the same as that adopted by Peuchet in his *Statistique Elementaire de la France;* but with a greater latitude of criticism than that writer thought it right or perhaps safe to indulge in. We have not been satisfied, for example, in giving an account of any branch of industry, with stating the value of its products, the number and wages of the people engaged in it, and so forth; but have, in addition, given some notices of its history, and of the more prominent of the circumstances that have acclerated or retarded its progress. This seemed to be necessary to impart interest to the work, to make it useful, and to give it a chance for getting into circulation. We have, also, seldom scrupled, when a fair opportunity presented itself, briefly to expound the general principles applicable to the subject under review; but, as these discussions are always separated from the descriptive and arithmetical details, they may be passed over by those anxious only to acquire information as to the latter.

In a work embracing such a diversity of subjects, the co-operation of different authors was necessary. The choice of these was left to the Editor; and he is not without hopes that the reader may be of opinion that there are not many instances in which a much better selection could have been made.

The articles on the Geology of the three great divisions of the empire were contributed by Robert Bakewell, Esq.; the article on the Climate of England by Dr. Copland, the learned and able author of the Medical Dictionary; that on Botany by Sir William Jackson Hooker, of Glasgow; and that on Zoology by William Swainson, Esq.

The important articles on the English Constitution and Courts of Law were contributed by F. Forster, Esq. A.M., Barrister at Law, and Fellow of Wadham College, Oxford; and we believe we run little risk in saying that they present one of the best as well as most compendious outlines of the constitution that is any where to be met with.

The chapter on Corporations is by Charles Neate, Esq., Barrister at Law.

The account of the Constitution and Courts of Law of Scotland was contributed by William Spalding, Esq., A. M., Advocate.

The articles on the Constitution, Courts of Law, Religious Establishments, Education, and Poor of Ireland were supplied by the Rev. Edward Groves, of the Record Office, Dublin. But it is due to that gentleman to state that he is not responsible for the statements on pages 312. and 313. of the second volume, nor for the reasoning in favour of the introduction of a system of poor-laws into Ireland.

The articles on the Religious Establishments and Education of Scotland are by Thomas Murray, Esq. LL.D., of Edinburgh; and are models of what such articles should be.

The article on Education in England and Wales, containing a luminous account of the systems of education followed at the great public schools, and at the Universities of Oxford and Cambridge, is the contribution of Herman Merivale, Esq. A.M., Barrister at Law.

William Farr, Esq., Surgeon, is the author of the elaborate and original article on Vital Statistics.

The account of the Compulsory Provision for the Poor of England, and of the changes effected by the late act, was furnished by George Coode, Esq., Barrister at Law, Assistant Secretary to the Poor Law Commissioners.

Dr. Irving, Librarian to the Faculty of Advocates, Edinburgh, is the author of the chapter on the Origin and Progress of the English Language.

For the remainder of the work, and its general supervision, the Editor is responsible.

We are quite aware that, notwithstanding the pains that have been taken to make this publication worthy of the subject, it is fairly open to much criticism. Some may think that we have discussed various topics that had been better omitted to the exclusion of others of greater importance; and others, without objecting to the subjects, may probably object to the way in which they are treated. But, in a work of this kind, the outline of which does not admit of being accurately defined, and where much must necessarily be left to the discretion of the compilers, it is impossible to please all parties; and we shall be satisfied if we shall be thought to have produced a work which, though not free from defects, furnishes, on the whole, a tolerably correct view of the present state and resources of the empire.

Notwithstanding the magnitude of the materials from which we have drawn, we have had to regret the extreme scarcity, and sometimes, indeed, the total want, of all authentic and trustworthy information on various important points. In many instances we have had to build our conclusions on reasonings from analogy, or on a few detached facts; and we have not unfrequently been compelled, from the total want of experience and information, to decline drawing any conclusions. Few, indeed, would imagine, *à priori*, how ill supplied British writers are with the means necessary to throw light on some of the most interesting departments of statistical inquiry. Latterly, indeed, the public attention has been, in some degree, awakened to the state of this long-neglected department of science, and a few steps, though of no great importance, have been taken to supply the deficiencies in question. But much remains to be done. And we may be permitted to hope that the circulation of this work, by bringing those deficiencies under the public view, and drawing attention to them, will, in this respect, if in none else, contribute to the advancement of the science.

CONTENTS

OF

THE FIRST VOLUME.

Page
STATISTICAL ACCOUNT OF THE BRITISH EMPIRE - - - 1

PART I.

EXTENT, PHYSICAL CIRCUMSTANCES, AND CIVIL DIVISIONS OF THE BRITISH EMPIRE.

CHAPTER I.

ENGLAND AND WALES - - - - 3
SECT. 1. — Name and Extent - - - 3
2. — Face of the Country - - - 7
3. — Mountains and Moorlands - - - 8
4. — Vales, Fens, Marshes, &c. - - - 18
5. — Rivers, River Ports, and Lakes - - - 30
6. — Sea-coasts and Sea-ports - - - 44
7. — Geology - - - - 61
8. — Climate - - - - 85
9. — Botany - - - - 100
10. — Zoology - - - - - 111
11. — Civil Divisions - - - - 144
12. — Statistical Notices of the different English Counties - 150
Counties bordering on Wales - - - 161
Midland Counties - - - 167
Eastern District - - - 184
South-eastern District - - - 201
Southern District - - - - 209
South-western District - - - - 217
Wales - - - - - 222
Islands - - - 226

CHAPTER II.

Page
SCOTLAND - - - - - - 231
SECT. 1. — Name. — Extent. — Face of the Country - - 231
2. — Mountains, Vales, &c. - - - 235
3. — Rivers and River Ports. — Lakes, &c. - - 242
4. — Sea-coasts and Sea-ports - - - 249
5. — Geology - - - - 256
6. — Climate - - - - 267
7. — Civil Divisions - - - - 272
8. — Statistical Notices of the different Scotch Counties - 273
Islands - - - - - - 314

CHAPTER III.

IRELAND - - - - - 324
SECT. 1. — Name. — Extent. — Face of the Country - - 324
2. — Mountains. — Level Lands, &c. - - 328
3. — Rivers and River Ports. — Lakes - - - 330
4. — Sea-coasts and Sea-ports - - - 340
5. — Soil, Bogs, &c. - - - - 350
6. — Geology - - - - 353
7 — Climate - - - - 364
8. — Civil Divisions - - - 368
9. — Statistical Notices of the different Irish Counties - 369
Leinster - - - - 369
Munster - - - - 376
Ulster - - - - 383
Connaught - - - - 391
Islands - - - - 395

PART II.

POPULATION - - - - - - - 396
SECT. 1. — Population of England and Wales - - - 396
2. — Population of Scotland - - - 418
3. — Population of Ireland - - - 428
4. — Population of the Empire - - - 439

PART III.

INDUSTRY OF THE BRITISH EMPIRE.

CHAPTER I.

AGRICULTURE - - - - - - 440
SECT. 1. — State of Property in England and Wales. — Size of Estates, &c. - - - - - - 440
2. — Division of the Kingdom into Agricultural Departments. — Size of Farms. — Conditions in Leases. — Buildings and Fences, &c. - - - - 441
3. — Tillage Husbandry - - - 462

Page
SECT. 4. — Agriculture of Scotland - - - 477
5. — Grazing Husbandry of Great Britain - - 480
6. — Live Stock of Great Britain - - - 481
Cattle - - - - 485
Sheep - - - - - 492
7. — Agriculture of Ireland - - - 500
8. — Produce of Timber - - - - 526
9. — Distribution of Lands, Rents, Profits of Farmers, &c. - 530
I. — England - - - - 531
II. — Scotland - - - 541
III. — Ireland - - - - 545
Number of Persons employed in Agriculture - - 549
10. — Slow Progress of Agricultural Improvements. — Notices of the Progress and present State of English and Scotch Agriculture - - - - - 550

CHAPTER II.

MINES AND MINERALS - - - - 568

CHAPTER III.

FISHERIES - - - - - 595

CHAPTER IV.

MANUFACTURES - - - - - - 612
SECT. 1. — Circumstances favourable to the Progress of Manufactures and Industry - - - - 612
I. — Moral Circumstances contributing to the Progress of Manufactures - - - 612
II. — Physical Circumstances contributing to the Progress of Manufactures - - - 616
2. — Woollen Manufacture - - - - 619
3. — Cotton Manufacture - - - 641
Condition of Labourers employed in Cotton Factories - 663
4. — Linen Manufacture - - - - 672
5. — Silk Manufacture - - - 680
6. — Manufacture of Hardware, Watches, Jewellery, &c. - 694
7. — Leather Manufacture - - - 708
8. — Manufactures of Earthenware and Glass - - 711
9. — Paper Manufacture - - - - 718
10. — Malt, Breweries, and Distilleries - - 723
11. — Manufactures of Hats, Soap, Refined Sugar, &c. - - 729

STATISTICAL ACCOUNT

OF THE

BRITISH EMPIRE.

The British Empire, exclusive of its foreign dependencies, consists of the islands of Great Britain and Ireland, and of the smaller islands contiguous and subordinate to them. Great Britain, the largest and by far the most important of the British Islands, is divided into the kingdoms of England and Scotland; the former occupying its southern, most fruitful and extensive, and the latter its northern, more barren, and smaller portion. After the withdrawal of the Romans from Great Britain, these two divisions became separate and independent states, between which the most violent animosities frequently subsisted. In consequence of the marriage of Margaret, daughter of Henry VII. of England, to James IV. King of Scotland, in 1502, James VI. king of Scotland, ascended the English throne, upon the demise of Queen Elizabeth, in 1604. But, notwithstanding this union of the crowns, the two kingdoms had distinct and independent legislatures till 1707, when, under the auspices of Queen Anne, a legislative union of England and Scotland was completed. In many respects, however, the institutions of the two countries still continue peculiar. The common law and the judicial establishments of England differ much from those of Scotland; the prevailing religion, and the church establishment of the former are also materially different from those of the latter; and the manners and customs of the two countries, though gradually assimilating, still preserve many distinguishing features. For these reasons, in treating of the statistics of the British Empire, we shall separate the details peculiar to the different branches of English statistics from those peculiar to the statistics of Scotland, without, however, treating the one as if it were entirely independent of the other.

Similar reasons have induced us to separate the statistical details peculiar to England and Scotland, from those peculiar to Ireland. Though now legally incorporated with Great Britain, the distinction between the latter and Ireland is far more decided than that between

England and Scotland. The insular situation of Ireland, removed to a considerable distance from Britain, gives her an indelible character of individuality. And though the English and their descendants have long had the ascendancy in Ireland, and English laws have been established there from a remote era, the Irish continue to be, in many respects, a peculiar people; so much so, that there is certainly less similarity between them and the English, than between the latter and the Scotch. The circumstance of the vast majority of the Irish being attached to the religion of Rome, while the English in Ireland profess the reformed faith, explains some of the apparently anomalous features in the condition of the Irish people; but, exclusive of this, a vast variety of circumstances, some of the more prominent of which will be mentioned in the course of this work, have contributed to form the distinctive and peculiar habits and character of the Irish.

The British Isles, exclusive of those of Orkney and Shetland, lie between the 50th and 59th degrees of north latitude; and between the 11th degree of west and the 2d degree of east longitude. They are, consequently, opposite to the northern coasts of France, the Netherlands, Denmark, and the southern part of Norway. The south-east extremity of Great Britain is separated from France by the Straits of Dover—a narrow channel, only 21 miles wide; but, as the British coasts recede from this point in a north-westerly direction, while the opposite Continental shores recede to the north-east, the intervening sea is of pretty ample dimensions. Ireland lies to the west of Great Britain, from which it is separated by St. George's Channel and the Irish Sea; its southern and northern extremities being nearly in the same latitudes as Bristol and Alnwick.

The insular situation of Great Britain and Ireland is productive of many advantages;—it renders them comparatively secure from hostile attacks, at the same time that it affords every facility for commerce; and though it subjects the climate to sudden changes, it makes it really *temperate*, exempting us from those comparatively lengthened and violent extremes of heat and cold experienced in the Continental countries under the same parallel of latitude.

The distance, in a direct line, from the Lizard point near Falmouth, in lat. 49° 57′ 30″ N., long. 5° 13′ W., the southernmost land in England, to Dunnet Head in Caithness, in lat. 58° 42′ N., long. 3° 29′ W., is 608 miles. But a considerable portion of this line is water, inasmuch as it passes through the Bristol Channel, the Irish Sea, and the Moray Frith. The longest line, not intersected by any considerable arm of the sea, that can be drawn in Great Britain, stretches from Rye in Sussex, in lat. 50° 57′ 1″ N., long. 0° 44′ E., to Cape Wrath in Sutherland, in lat. 58° 37′ N., long. 4° 59′ W., a distance of 580 miles. The longest line that can be drawn crosswise in Great Britain, is from the Land's End, in lat. 50° 4′ 8″ N., long. 5° 41′ 31″ W., to a point near Lowestoffe, on the coast of Norfolk, in lat. 52° 29′ 10″ N., long. 1° 45′ 14″ E., a distance of 367 miles; but, in other places, the breadth from sea to sea is much less considerable, being sometimes under 40 miles.

The east coast of Great Britain, though marked by several prominences, of which the great triangular district terminating in Kinnaird's

Head is by far the most conspicuous, is, on the whole, pretty regular; and were a straight line drawn from Dover to Duncansby Head, the land cut off from the main body of the island would not be far from equal to the water included. The western coast, on the contrary, is exceedingly irregular. The principal encroachment of the sea is between the coast of Galloway and the island of Anglesea and the coast of North Wales; but, exclusive of this great basin, the whole west of Scotland is deeply indented with large bays; while Cardigan Bay and the Bristol Channel deeply mark the coast of Wales and the south-west part of England. There are several admirable ports, and some considerable bays, though none of them is on a very large scale, on the south coast of England, between the Land's End and the South Foreland.

PART I.

EXTENT, PHYSICAL CIRCUMSTANCES, AND CIVIL DIVISIONS, OF THE BRITISH EMPIRE.

CHAPTER I.—England and Wales.

Sect. 1.—*Name and Extent.*

Name.—The term England is derived from the Angles, or Anglo-Saxons, a German tribe or nation, supposed to have occupied in the sixth century the country between the Elbe and the Eyder. This tribe, following the example that had been set by other tribes of the same race, invaded South Britain in 547, about 140 years after the subversion of the Roman power, and about a century after the invasion of Britain by the Jutes, or Saxons of Jutland. The Angles first landed in Northumberland; but not long after they took possession of Norfolk; and being the most powerful or predominant of the Teutonic tribes established in this part of Britain, it received from them the name of England, that is, the land or country of the English, or Angles.

There is more difficulty as to the term Wales. It was the name given by the Saxons to the principality to which it is still applied; and also to Devonshire and Cornwall, which were called West Wales. Etymologists differ as to the origin of the name. Sumner supposes that it is derived from the Saxon *weallen*, to wander; and that the Saxons meant by it to specify the countries to which they and the other German tribes compelled part of the Britons to resort, as fugitives and wanderers, from the richer and more level country to the eastward of the Severn and the Exe.—(*Campbell's Political Survey*, vol. ii. p. 310.)

Figure and Extent.—The figure of this grand division of great Britain is triangular: the base of the triangle being formed by a line drawn from the South Foreland in Kent, to the Land's End in Cornwall; the eastern side by a line drawn from the South Foreland to Berwick; and the western, or longest side, by a line drawn from

Berwick to the Land's End. It is bounded on all sides by the sea, except on the north, where it unites with Scotland; from which it is separated partly by the river Tweed, and partly by a waving and not very well defined line, drawn from near Coldstream to the bottom of the Solway Frith, in a south-westerly direction.

Geographers and writers on political arithmetic, have differed very widely in their estimates of the area of England and Wales. According to the most ancient and traditional opinion, they contained 29,000,000 statute acres. Dr. Beeke remarks, that this nearly coincides with the extent of the Anglo-Saxon kingdom, and he believes that it may be traced back to that period. "Probably," says he, "it was not the result of any geographical inquiry, though the times in which I suppose it to have originated were by no means so incompetent to such an inquiry as may be imagined; but was a computation made from the returns to the royal treasury. The mode of levying the revenue of the Anglo-Saxon kings led to a more minute investigation of the extent and cultivation of their territory than has recently been attempted. The celebrated Domesday Book of the Norman conquerors was evidently formed on a more ancient register of the same kind, to which it continually refers."—(*Observations on the Income Tax*, 2d ed. p. 10.)

The admeasurement of the maps of the seventeenth century, inaccurate as they were, would have sufficed to prove that England and Wales contained more than 29,000,000 acres. It is singular, therefore, that Sir William Petty should have estimated their area at only 28,000,000 acres. Dr. Beeke thinks it probable that he may have calculated by 60 miles to a degree of latitude; and if so, his estimate would nearly correspond with the area deducible from Morden's map, the best that was then published.

Gregory King estimated the area of England and Wales at 39,000,000 acres; but the first estimate to which much attention is due, is that framed by Dr. Halley. Taking the best maps then extant for the basis of his calculation, he found, measuring the counties separately, the entire area of England and Wales to amount to 39,938,500 acres. Unfortunately, however, the maps to which Dr. Halley was obliged to resort were very inaccurate, particularly as respected the southern counties. The operations connected with the Ordnance survey have shown that the distance between the South Foreland and the Land's End had been exaggerated by about half a degree! But for this extraordinary error, Dr. Halley's estimate would not have been very wide of the mark.

It is needless to specify in detail the various estimates given by Grew, Templeman, Arthur Young and others; they vary from 31,648,000 to 46,916,000 acres! The last, which is the number given by Mr. Young, in his "Travels in France*," was adopted by Mr. Pitt, in his estimate of the probable product of the income tax; by Mr. Middleton, in his Survey of Middlesex, and by other authorities.

The first approach to a more correct computation was made by

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* Vol. i p. 286. Mr. Young had previously given a more accurate estimate in the second part of his "Political Arithmetic," p. 26.

Dr. Beeke, in his elaborate tract on the income tax. Availing himself of later and more correct observations, by which the true distance between several of the principal points had been determined, he computed the area of England and Wales at 38,498,572 acres; but more recent investigations have shown that even this computation is about 1,400,000 acres too great. According to the results deduced from Arrowsmith's map, which, as it was principally founded on the Ordnance survey, could not involve any very material error, the area of England was set down, in the remarks prefixed to the census of 1821, at 50,535 square miles, and that of Wales at 7,425, making together 57,960: but in the late census, Mr. Rickman has reduced the area of England to 50,387 square miles.* It is, however, worthy of remark, that the area of the different counties, obtained by adding together the areas of the parishes and hundreds contained in each, as given in the Population Returns, does not correspond in any instance with their aggregate measurement. The area of England and Wales, as deduced from them, only amounts to 49,641 square miles, being 746 square miles less than the other. No attempt is made, in the official papers referred to, to explain this discrepancy. We subjoin—

A TABLE

Exhibiting the Area of the Counties of England and Wales in Square Miles and Statute Acres, as deduced from the aggregate Measurement of each; the Acres in each, as deduced from the Particulars in the Population Returns for 1831; and the Fractional Part of the entire Area of England and Wales, supposing it to be represented by 1,000, contained in each County, according to its aggregate Measurement.

ENGLAND.

Counties.	Square Miles aggregate Measurement.	Statute Acres, aggregate Measurement.	Statute Acres, according to Details in population Returns.	Part of the Area of England and Wales, supposing it to be 1,000, contained in each county, according to aggregate Measurement.
Bedford - -	463	296,320	297,632	8·008,718
Berks - -	752	481,280	472,270	13·007,680
Buckingham -	738	472,320	463,820	12·765,516
Cambridge - -	857	548,480	536,853	14·823,912
Cheshire - -	1,052	673,280	649,050	18·196,914
Cornwall, excl. of Scilly Islands -	1,330	851,200	849,200	23·005,604
Cumberland - -	1,523	974,720	969,490	26·344,012
Derby - -	1,028	657,920	663,180	17·781,775
Devon - -	2,585	1,654,400	1,636,450	44·713,900
Dorset - -	1,006	643,840	627,220	17·401,232
Durham - -	1,097	702,080	679,530	18·975,299
Essex - -	1,533	981,120	979,000	26·516,986
Gloucester - -	1,258	805,120	790,470	21·760,188
Hants - -	1,625	1,040,000	1,018,550	28·108,351
Hereford - -	863	552,320	543,800	14·927,697
Hertford - -	630	403,200	400,370	10·897,392
Huntingdon -	372	238,080	241,690	6·434,650
Kent - -	1,557	996,480	972,240	26·932,125
Lancaster - -	1,766	1,130,240	1,117,260	30·547,291

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* We believe it should be 50,380.

ENGLAND.

Counties.	Square Miles, aggregate Measurement.	Statute Acres, aggregate Measurement.	Statute Acres, according to details in Population Returns.	Part of the Area of England and Wales, supposing it to be 1000, contained in each County, according to aggregate Measurement.
Leicester - -	806	515,840	511,340	13·941,742
Lincoln - -	2,611	1,671,040	1,663,850	45·163,634
Middlesex - -	282	180,480	179,590	4·877,880
Monmouth - -	496	317,440	324,310	8·579,534
Norfolk - -	2,024	1,295,360	1,292,300	35·010,033
Northampton -	1,016	650,240	646,810	17·574,206
Northumberland -	1,871	1,197,440	1,165,430	32.363,523
Nottingham -	837	535,680	525,800	14·477,963
Oxford - -	756	483,840	467,380	13·076,870
Rutland - -	149	95,360	97,500	2·577,320
Salop - - -	1,343	859,520	864,360	23·230,471
Somerset - -	1,645	1,052,800	1,028,090	28·454,300
Stafford - -	1,184	757,760	736,290	20·480,177
Suffolk - -	1,515	969,600	918,760	26·205,632
Surrey - -	759	485,760	474,480	13·128,762
Sussex - -	1,466	938,240	907,920	25·358,057
Warwick -	897	574,080	567,930	15·515,810
Westmoreland -	762	487,680	485,990	13·180,655
Wilts - -	1,367	874,880	869,620	23·645,610
Worcester - -	723	462,720	459,710	12·506,054
Yorkshire - -	5,836	3,735,040	3,669,510	100·947,900
Fractional part not explained -	7	4,480		121,082
Add for Scilly Islands - -			5,570	
Total of England	50,387	32,247,680	31,770,615	871·566,457

WALES.

Counties.	Square Miles, aggregate Measurement.	Statute Acres, aggregate Measurement.	Statute Acres, according to details in Population Returns.	Part of the Area of England and Wales, supposing it to be 1000, contained in each County, according to aggregate Measurement.
Anglesey - -	271	173,440	No details given	4·687,608
Brecknock - -	754	482,560		13·042,275
Cardigan - -	675	432,000		11·675,777
Caermarthen - -	974	623,360		16·847,713
Caernarvon - -	544	348,160		9·409,811
Denbigh - -	633	405,120		10·949,284
Flint - -	244	156,160		4·220,577
Glamorgan - -	792	506,880		13·699,578
Merioneth - -	663	424,320		11·468,207
Montgomery -	839	536,960		14·512,558
Pembroke - -	610	390,400		10·551,443
Radnor - -	426	272,640		7·368,712
Total of Wales	7,425	4,752,000		128·433,543
Add Total of England as before -	50,387	32,247,680	31,770,615	871·566,157
Total of England and Wales -	57,812	36,999,680		1,000·000,000

SECT. 2. — *Face of the Country.*

Few countries exhibit a greater variety of surface than England, or have been more highly favoured by nature. "Although," says Dr. Aikin, "its features are moulded on a comparatively minute scale, they are marked with all the agreeable interchange which constitutes picturesque beauty. In some parts, plains clothed in the richest verdure, watered by copious streams, and pasturing innumerable cattle, extend as far as the eye can reach: in others, gently rising hills, and bending vales, fertile in corn, waving with woods, and interspersed with flowery meadows, offer the most delightful landscapes of rural opulence and beauty. Some tracts furnish prospects of the more romantic and impressive kind; lofty mountains, craggy rocks, deep dells, narrow ravines, and tumbling torrents: nor is there wanting as a contrast to those, scenes in which every variety of nature is a different charm, the vicissitude of black barren moors, and wide inanimated heaths."—(*England Described*, p. 1.) Such is a vivid description of the general appearance of England. But the beauty and fertility of the country are not the only things to excite admiration; the mildness of the climate, removed alike from the extremes of heat and cold; the multitude of rivers, their depth, and the facility they afford to internal navigation; the vast beds of coal and other valuable minerals hid under the surface; the abundance and excellence of the fish in the rivers and surrounding seas; the extent of sea-coast; the number, capaciousness, and safety of the ports and bays; and the favourable situation of the country for commerce; give England advantages that are not enjoyed in an equal degree by any other nation. The panegyric of Pliny on Italy, is, in most respects, still more applicable to England: — "Ergo in toto orbe et quacunque cœli convexitas vergit, pulcherrima est omnium regio, rebusque merito principatum naturæ obtinens, rectrix parensque mundi altera; viris, fœminis, ducibus, militibus, servitiis, artium præstantia, ingeniorum claritatibus, jam situ ac salubritate cœli atque temperie, accessu cunctarum gentium facili, littoribus portuosis, benigno ventorum afflatu, aquarum copia, nemorum salubritate, montium articulis, ferorum animalium innocentia, soli fertilitate, pabuli ubertate. Quicquid est quo carere vita non debeat, nusquam est, præstantius."—(*Hist. Nat.* lib. xxxvii. cap. 13.)

No one will expect to find, in a work of this sort, either a full description of the country, or minute topographical details. It is impossible, however, to form any just notion of its actual *state and resources*, without having a general acquaintance with its physical as well as with its moral and political condition.

The face or appearance of a country may be variously described. Some geographers commence their descriptions by giving an account of the rivers, and of the basins, or tracts of country, drained by each. But though this method has some advantages, we incline to think that the best and most natural order is to begin with the description of the mountains; proceeding successively to describe the vales, the rivers and lakes, and the sea-coasts and harbours: having done this, we shall lay before the reader accounts of the geology of the country, and of its climate, botany, and zoology. It is hoped that the reader may, in this way, acquire sufficiently distinct ideas with respect to the natural powers and capacities of the empire.

Sect. 3.—*Mountains and Moorlands.*

Though the mountains of England are but of very inferior dimensions, compared with those of some of the continental states, they form a prominent and distinguishing feature in its physiognomy. We shall include under this head a brief notice of the principal hills and moorlands; meaning by the latter, the principal elevated tracts of heathy or moorish ground.

A chain of mountains or hills extends, with but few interruptions along the whole western side of the kingdom, from Cumberland to the Land's End. It is of very various breadth and elevation. In some places it approaches quite to the west coast; occasionally sending off large spurs or arms to the east. Assuming the summit of this great chain to form the natural division between the eastern and western sides of the kingdom, the former is by far the largest, richest, and most important. The western side is not, however, without many considerable tracts of rich, fertile, level land; but they are very inferior, in extent and value, as compared with the others.

Most of the rivers of England have their sources in this grand chain. With the exception, indeed, of the Severn, which principally follows a southerly course, and of the Eden, which flows north-west, all of them that are of any considerable magnitude flow eastward; the limited territory traversed by those that run westward not allowing them space to attain a lengthened course, or to carry off a large body of water.

The great longitudinal chain has been divided into three portions, respectively denominated the Northern, Cambrian, and Devonian ranges. The first, taken in its utmost extent, stretches from the Scottish border to the middle of Derbyshire: it enters England at Carter Fell, near the north-eastern extremity of Cumberland; and stretches southwards in a pretty direct line till it is interrupted by the valley of the Ribble, Craven, and the valley of the Aire. This part of the chain lies partly in Cumberland, partly in Westmoreland, partly in Northumberland, and partly in Durham and Yorkshire: its summit ridge separates the waters of the North Tyne, South Tyne, Tees, Swale, Ure, and Wharfe, flowing eastward, from those of the Irthing, Eden, Lowther, Lune, and Ribble, flowing westward. Its elevation varies from 1,200 to near 3,000 feet: the highest summits are Cross Fell, near the sources of the South Tyne and the Tees, in the western part of Cumberland, 2,901 feet high; Shunnor Fell, in which the Eden and the Swale have their sources, on the confines of Yorkshire and Westmoreland, 2,329 feet high; and Whernside, Ingleborough, and Pennigent, respectively 2,384, 2,368, and 2,270 feet high, in the westernmost parts of Yorkshire, contiguous to the sources of the Ribble and the Wharfe.

An important portion of the northern range lies to the westward of that connected central ridge here noticed, being separated from it by the valley of the Eden and the Vale of Kendal. This portion stretches lengthwise from near Ireby, in Cumberland, to Ulverston in Lancashire and from Lowther Water, across to Dent Hill, near St. Bee's Head. Some of the summits in this group are the highest of any in England. The most elevated are those of Scaw Fell, Helvellyn, Skiddaw, and Bow Fell, in Cumberland, respectively 3,166, 3,055, 3,022, and 2,901 feet above the level of the sea. Scaw Fell has two principal summits, separated from each other by a deep chasm, the one being 66 feet higher than the other. Helvellyn is in most parts extremely rugged and precipitous: in point of mass it far exceeds almost any other of the Cumbrian mountains: it is, however, closely hemmed round by others; while Skiddaw, though of inferior dimensions, being comparatively detached, appears to much greater advantage, and may be seen nearly on every side in its entire elevation. Exclusive of the above, the Nine Pins, in Westmoreland, rise 2,136 feet above the level of the sea; and Coniston Fell, in Lancashire, 2,577 feet.

The mountains in the central range extend in some places to a great width; insensibly shelving down and uniting, on the eastern side, with the Cheviot hills, and the moors of Northumberland, Durham, and West Yorkshire. They are in general rounded and tame, and are mostly covered with peat earth and heath, having a dreary, bleak, desolate aspect. But those in the western group are generally steep, bold, and rugged; in their disposition there is little of regularity, no lengthened ridge or continuous chain; their appearance is that of a congeries of immense broken and mostly angular masses, having their bases united, or nearly so, except where they are separated by lakes. The western mountains, unlike those of the eastern ridge, are mostly covered with a fine green sward, affording excellent pasture for sheep: Skiddaw, however, is partially clothed with heath.

The varied forms of these mountains, ornamented in parts with wood, and the picturesque beauties of the numerous lakes scattered amongst them, form a *tout ensemble* of very attractive scenery. They are seen to the greatest advantage on the road from Kirby Lonsdale, by Kendal, to Shap.

Besides slate and limestone, of which, indeed, the mountains in this part of the northern range are mostly composed, they furnish considerable supplies of coal, lead, and of the rare mineral plumbago, or black lead; this is obtained from a mine in Borrowdale, in Cumberland, of a finer quality than any hitherto discovered in any other part of the world.

The Cheviot hills unite with the north-eastern confines of the great central range now described. They are situated partly in Scotland, and partly in Northumberland: that part of them which is in the latter, occupies the space between the Scottish border on the north-west, and the upper part of the river Coquet on the south, round by Prendwick, Ilderton, Wooler, and Kirknewton, to Mindrim; including an area of from 90,000 to 100,000 acres. Several of these hills have a conical figure, some being nearly perfect cones; while the shape of others is very irregular: in general, however, they are pointed, their sides smooth, and rapidly sloping, and their bases separated by deep narrow glens. Except at their very summits, where points of rock and loose stones appear, they are mostly covered with a pretty fertile soil, producing a rich, close, green sward; but on the upper parts of the hill, called by way of distinction the Cheviot, and which is 2,658 feet above the level of the sea, there are extensive tracts of heath. The Cheviot hills are depastured by numerous flocks of the valuable and peculiar breed of sheep called the Cheviots, now widely diffused, not only over the north of England, but also over almost all Scotland.

As already stated, the northern part of the great central chain is divided into two portions by the valley of the Ribble, the district of Craven, and the valley of the Aire. The Leeds and Liverpool canal, which passes through Craven, and may be considered as the line of demarcation, has at its summit level, opposite to Pinnow Hill, an elevation of 500½ feet. From this hill, the southern division of the British Apennines, as the northern central range has sometimes been termed, extends nearly south along the eastern border of Lancashire, Cheshire, and Staffordshire, the western parts of the West Riding of Yorkshire, and the northern and western parts of Derbyshire, to near Ashborne in the latter. The length of the chain is above 60 miles; but its breadth is extremely various, being about 20 miles across from near Sheffield to Cheshire, whereas between Rochdale and Huddersfield, it is merely a narrow ridge. It separates the waters of the Calder and the Dun, flowing east, from those of the Irwell and the Mersey, flowing west. Its most elevated points are Bolesworth Hill, in the north-east part of Lancashire, 1,689 feet above the level of the sea; Blakestone Edge, on the confines of Lancashire and Yorkshire; Holme Moss, on the confines of Yorkshire and the eastern angle of Cheshire, 1,859 feet; Kinderscout and Lord's Seat, in the hundred of High Peak, Derbyshire, respectively 2,150 and 1,751 feet high; and Axedge, on the confines of Derbyshire, Cheshire, and Staffordshire, 1,715 feet.

The wonders of the *High Peak*, the name given to the north-western and most mountainous district of Derbyshire, have been repeatedly described. But it derives its celebrity more from its caverns, perforations, and dells, than from its mountains, which are inferior in point of romantic beauty, as well as of elevation, to those of Wales, Cumberland, and Westmoreland. Poole's Hole, near Buxton and Castleton Cavern, near the village of Castleton, are the most remarkable of the natural curiosities of the High Peak.

Before noticing the Cambrian mountains, there are a few groups of hills that may be advantageously alluded to here. The Malvern hills, between Herefordshire and Worcestershire, extend north and south about 10 miles. They rise on the eastern side from the Vale of Severn, of which they are one of the finest boundaries, connecting on the western side with a range of lower hills extending for several miles into Herefordshire. Their greatest elevation is 1,444 feet.

The Cotswold hills, in Gloucestershire, run S.W. and N.E. from the confines of Warwickshire to Wotton, a distance of about 44 miles. Their breadth is various, being in some places a narrow ridge, while in others the distance across is from 8 to 9 miles. They form the boundary between the waters that flow into the Severn on the one hand, and those that flow into the Thames on the other. Indeed, the sources of the Isis itself, and those of the Churn, Coln, and Windrush, its principal feeders, are either in, or immediately contiguous to, the Cotswold hills. The general elevation of the ridge may be from 500 to 600 feet. Its highest summits are Broadway Hill, near Chipping Camden, 1,086 feet above the level of the sea; Cleve Hill, near Cheltenham, 1,134 feet; and Symond's Hill, near Wotton, 795 feet. It is crossed in one of its hollows by the Thames and Severn Canal, the summit level of which, near the head of the Isis, is 351 feet above the sea. These hills are covered with a shallow calcareous loam, provincially called stonebrash, and are enclosed and mostly cultivated.

From Symond's Hill, a part of the Cotswold ridge extends to Bath. But the main portion, occupying the space between the Lower Avon, near its source, and the Isis, unites with Salisbury Plain. The Cotswold hills may, indeed, be considered as a continuation of that great central chain of mountains already noticed, stretching from the Scotch border to the middle of Derbyshire.

The Wrekin hill, in Shropshire, is so much higher than any other hill in its vicinity, that it seems to rise alone from the middle of the plain. It is craggy at the top; its plan is that of a long oval, pointing nearly north and south; and its figure has been supposed pretty exactly to resemble that of a whale asleep on the surface of the ocean. — (*Aikin's Tour in Wales*, p. 192.) Its height was not formerly supposed to exceed 1,200 feet; but it is now ascertained to be 1,320 feet above the level of the sea. The Wrekin may be considered as the northern extremity of a ridge, lying in the same line with it, consisting of the hills of Frodsley, Caradoc, &c. They are craggy at the top, and ascend from the plain of Salop at an angle of about 60°.

The Cambrian mountains, forming the Alpine portion of the great longitudinal chain, are a good deal more elevated in North than in South Wales. The principal chain runs in a north-east and south-west direction, the whole length of Caernarvonshire, from the point of Lleyn, opposite to Bardsey Island, to Penmaenbach Promontory, on Conway Bay. The mountains of which it is composed are the highest in the principality. They gradually ascend from each extremity of the chain towards the centre, which is occupied by Snowdon, the loftiest of all. The general escarpment fronts the sea; while the particular escarpment of individuals, or detached groups, depends upon the course of the streams. The altitude of the highest peak of Snowdon is 3,571 feet above the mean level of the sea, being the most elevated land in South Britain. The mountain terminates in various cliffs; and the particular cliff, the *Wyddva*, to which the name of Snowdon is particularly applied, scarcely out-tops several of the summits by which it is surrounded. The western side of the mountain is very precipitous, and is composed partly of pentagonal basaltic columns. Carnedd Llywellyn, and Carnedd David, lying N.E. of Snowdon, are the next highest mountain in this chain. — (*Davies's North Wales*, p. 20.; *Aikin's Tour in North Wales*, p. 94. &c.)

A chain of mountains, occupying the conterminous parts of

Merioneth, Montgomery, and Denbigh shires, runs nearly parallel to the Caernarvon chain, from Powyn and the base of "huge Plynlimmon," to Llangollen. The summit of this chain forms the line of demarcation between the waters that flow into the Severn on the one hand, and the Dee on the other. Its highest points are Cader Ferwyn, Arran Fowdy, and Cader Idris. Of these, the last is by far the most celebrated. It rises on the sea-shore, close to the northern side of the estuary of the small river Disynwy, about a mile above Towyn. It gradually ascends in a northerly direction for about 3 miles; then for about 10 miles further it runs E.N.E., giving out from its summit a branch nearly 3 miles long, in a south-westerly direction parallel to the main ridge. The highest point has an elevation of 2,914 feet above the level of the sea. It is on all sides steep and craggy; especially on the south, bordering Talyllyn lake, where it is nearly perpendicular. Its breadth, where greatest, bears but a small proportion to its length. In some places it is a mere ridge, with a base not exceeding a mile in width. — (*Aikin*, p. 64. &c.)

Plynlimmon is, in point of mass, the largest mountain in Wales; but in respect of altitude it is very inferior to several others, being only 2,463 feet above the level of the sea. The Severn, Wye, and Rhydiol, flowing east, south, and west, have their sources near each other in this mountain.

From Plynlimmon a ridge extends south to Tregarron Down; and then south-westerly, along the southern side of the Teify, to the Prescelly hills in Pembrokeshire. The highest points in this range do not reach an altitude of more than 1,800 ft.

Radnorshire and Brecknock are both much encumbered with mountains. The Talgarth and Black Mountains stretch from the latter in Caermarthenshire. The latter derive their name either from their dreary blackness, or from the dark appearance of the heath by which they are covered, when out of blossom. The Van or Beacon, the highest of the Brecknock hills, and, indeed, of those of South Wales, has an elevation of 2,862 feet. The northern parts of Glamorgan are also mountainous; but none of the summits is of any very considerable height.

The mountains to which the name of the Devonian range has been given, occupy part of Devonshire, Cornwall, and Somersetshire. The principal chain stretches in a south-westerly direction, from the borders of the Vale of Exeter to the Land's End. The highest points in this range are Yestor and Cawston Beacon, near Okehampton, — the former having an elevation of 2,077, and the latter of 1,792 feet; and Rippin Tor, about five miles from Newton Bushel, 1,549 feet high. The space between these mountains, round by Erme Head on the south, and Brentor on the west, is occupied by Dartmoor. This, which is one of the most remarkable tracts in the kingdom, includes a space of from 200,000 to 300,000 acres. It is said, but we suspect the statement is exaggerated, to have a mean elevation of more than 1,700 feet above the level of the sea. Its surface is, in most places, extremely rugged: the soil, where it is not encumbered with broken fragments of rock, is mostly thin and poor; and in the most elevated part of the moor there is an immense morass, covering about 80,000 acres, which in some places is incapable of supporting the lightest animals. That part of Dartmoor called the Forest, embracing an extent of about 54,000 acres, belongs to the Crown, as parcel of the Duchy of Cornwall; and on this and some other of the best parts of the moor, considerable improvements have been made, particularly in the way of planting. Very large buildings for the accommodation of prisoners were erected here during the latter part of last war. — (*Vancouver's Survey of Devon*, p. 279, &c.)

Caraton Hill, 1,208 feet high, and Hensbarrow beacon, 1,034 feet, are the two most elevated points in that part of the chain now under consideration which runs through Cornwall. Pertinney, contiguous to the Land's End, has an elevation of 689 feet.

The Mendip, Quantock, and Brendon hills, in Somersetshire, may be considered in connection with the Devonian range. Dunkerry Beacon, in the Brendon hills, is one of the highest hills in the west of England, being 1,668 feet above the level of the sea. From the summit there is an extensive view of the Bristol Channel. The Mendip hills stretch in a north-westerly direction about 25 miles, from near Chesterblade to the south of Shepton Mallet, to near Uphill, on the north side of the river Ax, contiguous to the Bristol Channel: their mean breadth is from 4 to 5 miles. The height of this ridge varies from 800 to about 1,100 feet. It was anciently a Royal Forest; but it is now partially inclosed and cultivated; the uninclosed portion, which is covered with heath and fern, affording pasture for a peculiar description of sheep. In the parish of Chedder, on the south-west side of the ridge, not far from Axbridge, is an extraordinary chasm, extending fully 2 miles into the hills. In some parts the limestone cliffs rise quite perpendicular, to the height of 300 feet. In general, the salient angles on the one side correspond with the recipient angles on the other; so that it would seem as if the mountain had been torn asunder by some great convulsion. — (*Maton's Western Counties*, vol. ii. p. 124.) The Mendip hills have been long famous for their mines of lead and calamine; but the former are now, either from the exhaustion of the ore or the difficulty of working them, nearly abandoned: the calamine mines are still wrought, but not to any great extent.

The southern and eastern parts of the island are traversed by different ranges of chalk hills. Some geologists trace one of these chains from Dorsetshire to Kent, and another from the Isle of Portland to the wolds in the East Riding of Yorkshire: but others contend that the highest, barest, and best defined ridges in the southern parts of the island diverge from the high table land of Salisbury Plain. One of them, after intersecting Hants and Sussex, terminates in the bold chalky cliffs of Beachy Head. The part of this ridge which lies in Sussex, being above 50 miles in length, and from 3 to 6 in breadth, is celebrated under the name of the South Downs, for the excellence of its sheep and sheep-pasture. Another ridge stretches from Salisbury Plain to the eastern coast of Kent. Part of this ridge, called the Surrey Downs, is not much less celebrated for its sheep-pasture than the South Downs. A little to the east of Farnham, in Surrey, where it is narrow, it is called the Hogsback; but as it penetrates deeper into the county, its breadth becomes more considerable. Its southern side is generally pretty abrupt, its northern gently sloping.

The third and most important range, supposed to diverge from Salisbury Plain, pursues a north-easterly direction, crossing the northern parts of Berks and the southern extremity of Oxfordshire; then running along the southern side of the Vale of Aylesbury, in Bucks, and along the southern confines of Bedfordshire and Cambridgeshire to Suffolk. It separates the waters of the Ivell, the southern Ouse, the Nene, and other rivers that have their embouchure in the Wash, from those of the western Colne, the Lea, Chelmer, Blackwater, Stour, &c., that fall into the Thames or the sea on the Suffolk coast. That part of this chain which is in Oxfordshire and Berks, is called the Chiltern hills. The most elevated points in the ridge are the Whitehorse, and Scatchamfly Beacon, in Berks, respectively 893 and 853 feet above the level of the sea; Wendover Hill, in Bucks, 905 feet; Kinsworth Hill, on the confines of Bedfordshire and Herts, 904 feet; and the Gogmagog hills, in the south of Cambridgeshire. The Grand Junction Canal crosses this ridge near Tring, in the north-western extremity of Herts, being there 389½ feet above the level of the sea. — (See *Priestley's Map of Canals, &c.*)

We subjoin a statement of the elevation of some of the principal mountains of England and Wales, as determined from observations made in the course of the Ordnance survey.

Agnes Beacon (St.), Cornwall -	621
Allport Heights, Derbyshire -	980
Alnwick Moor, Northumberland	808
Arbury Hill, Northamptonshire -	804
Arran Fowddy, Merionethshire	2,955
Arrenig, Merionethshire -	2,809
Axedge, Derbyshire - -	1,753
Bagborough, Somerset - -	1,270
Banstead, Surrey - - -	576
Bar Beacon, Staffordshire - -	653
Bardon Hill, Leicestershire -	853
Barnaby Moor, Yorkshire -	784
Beacon Hill, Wiltshire - -	690
Beacons of Brecknock, Brecknock	2,862
Beachy Head, Sussex - -	564
Beeston Castle, Cheshire - -	556
Billing Beacon, Lancashire -	633
Bindown, Cornwall - -	658
Black Comb, Cumberland -	1,919
Black Down, Dorsetshire - -	817
Black Hambleton Down, Yorkshire - - -	1,246
Blackheddon, Northumberland -	646
Bleasdale Forest, Lancashire -	1,709
Bodmin Down, Cornwall - -	645
Bolt Head, Devonshire - -	630
Bolesworth Hill, Lancashire -	1,689
Botley Hill, Surrey - -	880
Botton Head, Yorkshire - -	1,485
Bow Brickill, Bucks - -	683
Bow Fell, Cumberland - -	2,911
Bow Hill, Sussex - -	702
Bradfield Point, Yorkshire -	1,246
Bradley Knoll, Somersetshire -	973
Brandon Mount, Durham - -	875
Brenin Fawr, Pembrokeshire -	1,285
Brightling Down, Sussex - -	646
Broadway Beacon, Gloucestershire - - -	1,086
Brown Clee Hill, Shropshire -	1,805
Brown Willy, Cornwall - -	1,368
Bull Barrow, Dorsetshire - -	627
Butterton Hill, Devonshire -	1,203
Bwlch Mawr, Caernarvonshire -	1,673
Cader Ferwyn, Merionethshire -	2,563
Cader Idris, ditto -	2,914
Cadon Barrow, Cornwall - -	1,011
Caermarthen Vau, Caermarthenshire - - -	2,596
Calf Hill, Westmoreland - -	2,188
Capellante, Brecknockshire -	2,394
Capel Kynon, Caernarvonshire -	1,046
Carn Bonellis, Cornwall - -	822
Carn Minnis, ditto - -	805
Carnedd David, Caernarvonshire	3,427
Carnedd Llewellyn, ditto -	3,469
Carraton Hill, Cornwall - -	1,208
Cawsand Beacon, Devonshire -	1,792

Cefn Bryn, Glamorganshire	583
Chanctonbury Hill, Sussex	814
Cheviot, Northumberland	2,658
Cleave Down, Gloucestershire	1,134
Collier Law, Durham	1,678
Coniston Fell, Lancashire	2,577
Cradle Mountain, Brecknockshire	2,545
Cross Fell, Cumberland	2,901
Crowborough Beacon, Sussex	804
Cerny Brain Mountain, Denbighshire	1,857
Danby Beacon, Yorkshire	966
Dent Hill, Cumberland	1,115
Ditchling Beacon, Sussex	858
Dumpdon Hill, Dorsetshire	879
Dunkery Beacon, Somersetshire	1,668
Dundry Beacon, ditto	790
Dunnose Isle of Wight	792
Dwggan, near Builth, Brecknockshire	2,071
Garth (The), Glamorganshire	981
Gerwyn Goch, Caernarvonshire	1,723
Grasmere Fell, Cumberland	2,756
Greenwich Observatory, Kent	214
Haldon (Little) Devonshire	818
Hathersedge, Derbyshire	1,377
Hawkeston Obelisk (Top), Shropshire	812
Hedgehope, Northumberland	2,347
Helveyllin, Cumberland	3,055
Hensbarrow Beacon, Cornwall	1,034
Heswell Hill, Cheshire	475
Highbeech, Essex	750
Highclere Beacon, Hampshire	900
High Pike, Cumberland	2,101
Hind Head, Surrey	923
Holm Moss, Derbyshire	1,859
Hollingborn Hill, Kent	616
Holyhead Mountain, Anglesea	709
Ingleborough Hill, Yorkshire	2,361
Inkpin Beacon, Hampshire	1,011
Kensworth, Hertfordshire	904
Kilhope Law, Durham	2,196
Kit Hill, Cornwall	1,067
Lansdown, Somersetshire	813
Leith Hill, Surrey	993
Llandinam Mountain, Montgomeryshire	1,898
Llanelian Mountain, Denbighshire	1,110
Llangeinor Mountain, Glamorganshire	1,859
Llannon, Caermarthenshire	912
Longmount Forest, Shropshire	1,674
Long Mountain, Montgomeryshire	1,330
Loose Hoe, Yorkshire	1,404
Lord's Seat, Derbyshire	1,715
Malvern Hills, Worcestershire	1,444
Margam Down, Glamorganshire	1,099
May Hill, Gloucestershire	965
Moel Fammau, Denbighshire	1,845
Moel Morwith, Denbighshire	1,767
Moal Issa, ditto	1,037
Motteston Down, Isle of Wight	698
Mole Cop, Cheshire	1,091
Muzzle Hill, Bucks	744
Nettlebed (Windmill), Oxfordshire	820
New Inn Hill, Caermarthenshire	1,168
Nine Standards, Westmoreland	2,136
North Berule, Isle of Man	1,804
Pen Hill, Yorkshire	2,245
Pendle Hill, Lancashire	1,803
Pengarn, Merionethshire	1,510
Penmaen Mawr, Caernarvonshire	1,540
Pennigant Hill, Yorkshire	2,270
Pertiney, Cornwall	689
Pillar, Cumberland	2,898
Pilsdon Hill, Dorsetshire	934
Plynlimmon, Cardiganshire	2,463
Pontop Pike, Durham	1,018
Prescelly Top, Pembrokeshire	1,754
Radnor Forest, Radnorshire	2,163
Rippin Tor, Devon	1,549
Rhiw Mountain, Caernarvonshire	1,013
Rivel Mountain, ditto	1,866
Rivington Hill, Lancashire	1,545
Rodney's Pillar, (Base of) Montgomeryshire	1,199
Rook's Hill, Sussex	702
Roseberry Topping, Yorkshire	1,022
Rumbles Moor, Yorkshire	1,308
Saddleback, Cumberland	2,787
Scaw Fell (Low Point), Cumberland	3,092
Scaw Fell (High Point), ditto	3,166
Scatchamfly Beacon, Berks	853
Shunnor Fell, Yorkshire	2,329
Simonside Hill, Northumberland	1,407
Skiddaw, Cumberland	3,022
Snea Fell, ditto	2,004
SNOWDON, Caernarvonshire	3,571
Stow Hill, Herefordshire	1,417
Stow on the Wold, Gloucestershire	883
Talsarn, Cardiganshire	1,143
Tregarron Down, ditto	1,747
Trelleg Beacon, Monmouthshire	1,011
Water Cragg, Yorkshire	2,186
Weaver Hill, Staffordshire	1,154
Wendover Down, Bucks	905
Westbury Down, Wiltshire	775
Whernside (in Ingleton Fells), Yorkshire	2,384
Whernside (in Kettlesdale), Yorkshire	2,263
White Horse Hill, Berkshire	893
Wilton Beacon, Yorkshire	809
Wingreen Hill, Dorsetshire	941
Wittle Hill, Lancashire	1,614
Wordeslow Hill, Durham	632
Wrekin, Shropshire	1,320

Moorlands, &c. — The principal moorlands of England lie in the counties of Northumberland, Cumberland, Durham, York, Lancaster, and Stafford. In many parts they are identified with the great central chain of mountains already described. The Northumberland moorlands are very extensive, occupying nearly a third part of the surface of the county. They lie principally in its western parts, between the river Coquet and the north-western part of Durham, uniting with the great central ridge. Their average elevation may be from 500 to 1,000 feet above the level of the sea. They are not marked by any very striking inequalities of surface, being in general extensive, open, solitary wastes, producing little except heath, and affording a scanty subsistence to the flocks of sheep by which they are depastured. — (*Survey of Northumberland*, p. 5.) In this respect they present a striking contrast to the Cheviot hills in the northern part of Northumberland, and the hills in the pastoral district in the south of Scotland.

The moors of Durham lie in what is called the Lead-mine district of the county, to the west of a line drawn from Allansford to Barnard Castle. They are similar to the Northumberland moors. They were supposed by Mr. Bailey, in 1810, to be worth about 1*s.* an acre, and this is, most probably, about their value at present. — (*Survey of Durham*, p. 199.)

The moors of Cumberland and Westmoreland are so intermixed with the mountains of these counties, that they cannot be separately considered. The total extent of moor and mountain land in Cumberland is estimated at from 450,000 to 500,000 acres. In Westmoreland the mountains and moors occupy above two thirds of the entire surface of the county.

The Yorkshire moors are by far the most extensive and important of any in the kingdom. They consist of two grand portions, — the eastern and the western moorlands. The former lie in the North Riding, extending lengthwise from Osmotherly to Harwood Dale, between Scarborough and Whitby, a distance of above 30 miles; and from Guisborough, on the north, to Kirby Moorside, on the south, about 20 miles. But in this extensive tract there are a number of fertile, well cultivated dales, some of them containing from 5,000 to 10,000 acres and upwards. The middle part of these moorlands, separating the waters that flow into the Esk on the north, from those that flow into the Derwent on the south, is generally elevated about 1,000 feet above the level of the sea; but Botton Head and Loosehoe hills have, the former an elevation of 1,485 feet, and the latter of 1,404 feet. The surface of some of the hills is entirely covered with large freestones; and in other places, mosses, sometimes very large, and never to be passed without danger, extend to a great distance. The prevailing soil is peat earth, which is generally covered with heath. But in the western parts of the moorlands, called Hambledon hills, the soil is much better, being good loam on a limestone rock. The climate of these moorlands is dry, but cold and backward. Oats and bear, or big, are the only crops cultivated in the higher parts of the dales. Wheat is seldom sown at a greater elevation than 600 feet; and even there it is very precarious, the harvest being about a month later than at the foot of the moors. — (*Tuke's Survey of the North Riding*, p. 4.)

The western moorlands of Yorkshire lie mostly to the west of a line drawn from Barnard Castle, on the confines of Durham, to Ripley, and thence through Otley, Bradford, and Halifax, to the borders of Lancashire and Cheshire, being about equally divided between the North and West Ridings. They are of very great extent; but, exclusive of the moorlands, there are, to the west of the line now mentioned, some extensive valleys, lying along the Swale, Ure, Wharfe, Aire, Ribble, &c., with the high mountains of Ingleborough, Pennigant, Whernside Fells, &c. previously noticed. The western are not generally so sterile as the eastern moorlands. Many of the hills are covered with fine sweet grass; in other places, there are extensive tracts of coarse grass (bent); and where heath prevails, it is mostly mixed with grass, bent, or rushes. The soil in the lower parts of the moors is a fine loam, on a hard blue limestone.

The moorlands of Staffordshire are situated in the part of the county lying to the north of a line drawn from Newcastle-under-Lyne to Uttoxeter. Their elevation varies from about 500 to 1,154 feet; the last being the altitude of the Weaver hills, a little to the west of Ashborne. These moorlands are very various in quality and aspect. The best part, being that which lies on a limestone bottom, extends from the Weaver hills to Longnor, and from the river Dove to Morridge. This extensive tract produces fine herbage, and the breed of cattle is superior. Between Cheadle and Oakmoor (so called from the dwarf oaks with which it is covered), the moorlands are rough, barren, and bare; consisting of an immense number of rude heaps of gravel, confusedly thrown together into sudden swells, and deep, narrow glens. The country to the north-east of Mole Cop, on the confines of Cheshire, is, however, the worst in the moorlands; consisting principally of high moors and mosses. The summits of some of the hills in the vicinity of Leek terminate in huge cliffs, formed of masses of rock, piled on each other " in a most tremendous manner." — " Here single blocks, the size of church steeples, are heaped together; some overhanging the precipice, and threatening destruction to all who approach; and some of prodigious bulk have evidently rolled from the summit, and broken in pieces." — (*Pitt's Survey of Staffordshire*, 2d edit. p. 274.) Mill Dale, near Alstonfield, is a long uniform valley, or glen, of great depth. The sides consist of overhanging precipices of limestone, estimated to have from 100 to 150 yards of perpendicular elevation, and very steep. The width of this glen at the top scarcely exceeds the depth of its sides. It seems evidently to have been formed by the bursting or breaking of the rock in which it lies. The waters of the river Manyfold are absorbed by the fissures under the limestone rocks, near Butterton, and are again discharged at Ham, four miles below. — (*Pitt's Survey*, p. 273.)

Besides the above moorlands, and Dartmoor in Devonshire, already mentioned, the forest of Exmoor merits a brief notice. It is situated mostly in the south-west part of Somersetshire, but is partly also in Devonshire. It is an extensive tract, containing about 20,000 acres of moorland. The river Exe rises in the north-western extremity of

Exmoor, within about 5 miles of the Bristol Channel; and the elevation of the whole forest is very considerable. It contains a few patches of cultivated land, but it is mostly waste, and, it is believed, irreclaimable. On the summits of the hills, especially in the west and north, are swamps of many acres in extent. It produces a small hardy breed of horses; and affords pasture to above 20,000 sheep of a peculiar breed, to which it gives its name. — (*Billingsley's Report on Somerset*, pp. 286—289.)

Heaths. — The most extensive of the level heaths of England are those of Surrey, Dorset, and Hants. Bagshot Heath, in the north-western angle of Surrey, is an extensive tract, containing several thousand acres of exceedingly poor moorland, being for the most part quite level and uninteresting. It is elevated about 460 feet above the level of the sea. The principal heaths in Dorset and Hants extend in a direct line from the river Avon in the latter, to near Dorchester in the former, and from Wimborne Minster to the Purbeck hills. This extensive tract is dreary, and miserably poor. The most elevated parts seem to be wholly incapable of any improvement, unless it be that of planting; and the cost of bringing the barren tracts into tillage would very much exceed any probable return they could make. "A few cattle are kept on various parts of these heaths, and some poor half-starved sheep are occasionally seen wandering about, which are sometimes almost entirely swept off by the rot, and even the rabbits share the same fate." — (*Stevenson's Survey of Dorset*, p. 333.)

SECT. 4. — *Vales, Fens, Marshes, &c.*

In the English language the words vale, valley, and dale, have very appropriate and distinct meanings: — *Vale*, corresponding to the Scotch word *strath*, signifies a considerable extent of low country, lying between ranges of higher grounds: *valley* is the diminutive of *vale*; it is commonly used in the south of England, but in the north of England and the south of Scotland the word *dale* is used in its stead, and in the Highlands of Scotland the word *glen*. In a valley, the lower grounds are narrow, as from half a mile to a mile or two in width, generally with high steep banks on each side. The *dell* of the south of England corresponds to the *groin* or *gill* of the north of England; and the *cleugh* of southern Scotland is the diminutive of dale or valley, or a short or otherwise inferior valley: *dingle* is the diminutive of dell.

Of these we shall merely notice the vales; the valleys, dells, and dingles being too numerous; and most of them, however beautiful their scenery, too unimportant to deserve any particular description.

The north of England partakes too much of the mountainous character of Scotland to contain many extensive vales. Entering Northumberland from the north, the first we meet with is the Vale of Coquet, traversed by the river of that name. It is particularly noted for its fertility and the excellence of its agriculture. In the southern part of the same county is the Vale of Tyne; it exhibits a great variety of landscape, and above Newcastle is very rich and beautiful. The Vale of Stockton is formed of the lower vale lands of the county of

Durham, and the district of Cleveland in Yorkshire; these together form one homogeneous vale, intersected by the Tees, which forms the boundary between the two counties. This vale accompanies the Tees from the moorlands of Durham, in the neighbourhood of Barnard Castle, to its mouth, a distance of nearly 40 miles. It is bounded on the south by the eastern moorlands of Yorkshire, and on the north by the high lands of Durham; in its widest part it is 15 miles across, but its upper part, above Darlington, is narrow. It includes the towns of Barnard Castle, Darlington, Yarm, Stockton, and Stockesly; while Hartlepool and Guisborough stand on its margin: the surface is remarkably flat; the soil for the most part fertile; and it is distinguished for the excellence of its breeds of cattle, horses, and sheep, and the skill and enterprise of its farmers.

The Vale of York may justly be regarded as the first river vale in the island; it is situated mostly within the North Riding; but in its southern extreme it extends into the West and East Ridings. Its northern boundary is formed by a number of shallow small lakes, or *meres*, lying between the Tees, the Swale, and the Wisk; its southern boundary consists of the marshes of Yorkshire and Lincolnshire; the limestone of West Yorkshire and the skirts of the western moorlands constitute its western, while the moorlands, limestone heights, and wolds of the East Riding constitute its eastern boundary. From north to south its length is about 60 miles, with an average breadth of about 16; including an area of nearly 1,000 square miles. There are several towns in this vale, of which the principal are York, Northallerton, Thirsk, and Boroughbridge: on its western margin are Richmond, Rippon, Knaresborough, Tadcaster, and Doncaster; its eastern margin is also marked by some small towns, but none of them is of consequence enough to claim our notice. The surface of the vale is sufficiently diversified to give richness and beauty to its appearance; it is in most places fertile, and its agriculture is pretty good. Its northern extremity imperceptibly unites with the south-west margin of the Vale of Stockton; the rise in the ground by which they are separated being so inconsiderable as to escape notice in a general view of the country. Thus there is an uninterrupted continuance of vale lands, from the mouth of the Tees to the Humber, a distance of nearly 100 miles.

The limestone lands of East Yorkshire, which stretch westward from near Scarborough, along the feet of the moorlands to the Hambledon hills, and then bend southward to the extremity of those hills, where the line returns eastward along the Howardian hills to Malton, form three fourths of the outline of the Vale of Pickering; the remaining quarter being filled up by the chalk cliffs of the wold: its form is an imperfect oval, the larger diameter being about 35, and its shorter rather more than 10 miles; containing an area of nearly 300 square miles, or about 190,000 acres. This vale has all the appearance of a dried lake; being, in fact, a basin bounded by eminences on every side, except where there is a narrow outlet for its waters. It is intersected by the rivers Derwent and Rye. The district of Holderness, though not strictly a vale, has so many vale characteristics, as regards elevation, surface, and soil, that it would be improper to pass it over without notice. It comprises that part of the East Riding of Yorkshire, which is bounded by the German Ocean and the Humber on the east and south, and by the wolds on the west and north; and contains from 265,000 to 275,000 acres. The surface is not quite flat, but undulating; on the south it is low, Sunk Island, and some other considerable tracts, having been recovered from the sea. It has a strong, rich soil, consisting mostly of clayey loam, producing heavy crops of wheat and beans, and the most luxuriant pasture. In some places it is marshy, and large sums have been expended on its drainage, which, however, is still in progress. Altogether it is one of the most productive agricultural districts in the empire; has very little waste land; and is deservedly celebrated for its native breeds of sheep and cattle, both of which have been materially improved. The towns of Hull, Beverley, Driffield, Bridlington, Hornsea, and Patrington stand on and nearly define its boundaries.

In the north-west of England there is an extensive level tract, including a space of about 300,000 acres, having the city of Carlisle in its centre. This large plain is bounded on the north by the Frith and Moss of Solway; on the east, by the heights of Gillsland, and the eastern moorlands of Cumberland; on the south, it unites with the valley of Appleby; and on the west, it is bounded by the slate-rock mountains and the inlet of Abbey Holm. It is only on its southern margin that in its elevation it rises above the true vale character.

In Lancashire there are several extensive tracts which, though not vales, have a good deal of the vale character. The first we meet with, coming from the north, is "the Fylde." This tract stretches between the road from Garstang to Preston and the sea, being from 8 to 10 miles in width. The western and southern part of the large tract of country lying between the Ribble and Mersey is almost quite flat. There is, in fact, hardly a swell of any importance, in a direct line, between Liverpool and Oldham, at the foot of the central mountain ridge on the confines of Yorkshire. The Vale of Warrington, which enjoys a high degree of fertility, is watered by the Mersey, and comprises a considerable extent of ground, both on the Lancashire and Cheshire side of that river.

Cheshire is generally flat: a ridge of high ground crosses it from north to south on its western side; and on its eastern border there are some considerable eminences which form part of the highlands of Derbyshire and Staffordshire; but the rest of the country is nearly level; forming a very rich, fertile, and extensive plain.

The Vale of Severn, taken in its most comprehensive sense, may be considered as beginning above Chepstow: it includes within its outline great part of Worcestershire: it then contracts and closes on the north with the hills of Shropshire and Staffordshire. Its banks on the west are formed by the forest of Dean, Mayhill, the Malvern hills, and the hills of Herefordshire and Shropshire. Its eastern banks are formed by the Stroudwater and Cotswold hills, and the rising grounds on the borders of Warwickshire, closing with the Lickey and Clee hills. It is divided by the Bredon hills, and some smaller ones, into the three subordinate vales of Worcester, Gloucester, and Evesham: but if we suppose these hills and some hillocks near Gloucester to be removed, the whole will form one unbroken vale, traversed by the Severn from where its principal branches unite, till it falls into the Bristol Channel. The upper part of this extensive vale is rich; but it is too flat and its banks too tame to be picturesque. Its most striking scenery commences with the Malvern hills; and from these, till it reaches Chepstow, its banks present continuous beauties. Indeed it may almost be said to be a garden of 40 miles' extent, the Severn winding through it with unusual freedom, while the Welsh mountains in the distance present a striking contrast, and constitute a well-marked and noble outline.

> "The Vale of Severn, Nature's garden wide,
> By the blue steeps of distant Malvern wall'd,
> Solemnly vast." DYER'S *Fleece*.

The Vale of Gloucester, or that part of the Vale of Severn now noticed, which lies in Gloucestershire, deserves to be more particularly described. It may be divided into the Vale of Gloucester, strictly so called, and the Vale of Berkely. The former is semicircular, the Severn being the chord, and the environing hills the arc: in it lies the city of Gloucester, with the towns of Tewkesbury and Cheltenham. Its extent from Matson hill to Bredon hill, on the north, is 15 miles; its breadth from the Severn to Dowdeshill is 7 or 8 miles, containing between 50,000 and 60,000 acres.

The Vale of Berkeley approaches, in its outline, nearer to the segment of a circle than to any other regular figure: the Severn forms an irregular chord; the hills to the south and east a curve, which is continued to the northern angle by the Matson hills; from the foot of the latter to Auscliff its extent is about 25 miles, and its medium width about 4. Its area may be about 80 square miles, or 50,000 acres. The waters of the Severn, which are here more like a lengthened estuary than a river, give infinite grandeur to the view. The surface, which is somewhat irregular, is clad in perpetual verdure: the bottoms of the hills, stretching in many places towards the river, are hung with beech of the most luxuriant growth: the soil is uniformly rich, and the scenery in general extremely fine. By far the larger portion of the land is appropriated to grass.

In the south-west of England the vales of Exeter and Taunton are the most worthy of notice. The former accompanies the Exe from the sea to the Tiverton hills, which form its northern boundary. This boundary is continued toward the east by Blackdown hill, till it reaches the Honiton hills: on the west it is bounded by the Halldown hills, and a continuation of some heights that lie to the north of Exeter. It contains about 200 square miles, and is watered by the Exe and the Otter.

The Vale of Taunton, or Taunton Dean, lies in the south-west quarter of Somersetshire. It is bounded on the north by the Quantock hills; on the south by the Blackdown hills, which separate it from the Vale of Exeter; and on the west by the skirts of Exmoor: its boundaries on the east are not very well defined, but, in general, they are formed by the rising grounds of Curry and the marsh of Sedgmoor. It comprises about 100 square miles, or 64,000 acres, having within it the towns of Taunton, Wellington, and Milverton. The river Thone or Tone runs through it. The soil consists principally of a reddish loam, of great fertility, producing the finest crops, fruit, and herbage. The climate is peculiarly mild and serene. Drayton, in his Polyolbion, alludes to this vale as follows: —

> "What ear so empty is that hath not heard the sound
> Of Taunton's fruitful Deane? not match'd by any ground."

The fruitful Vale of Aylesbury lies in the middle part of the county of Buckingham. It is watered by the Thame and a small stream falling into it at the bottom of the vale. It furnishes rich pasturage for an immense number of cattle, being principally appropriated to the dairy and grazing systems.

The Trent, in many parts of its course, winds through vales which, though not of great extent, are neither deficient in beauty nor fertility. The Vale of Belvoir, in Nottinghamshire, merits notice: it stretches from the south-east bank of the Trent to the borders of Leicestershire and Lincolnshire. The soil, which is rich and loamy, is partly under the plough and partly in pasture.

Rutlandshire has one vale, that of Catmose, celebrated by Drayton. It extends from the western side to the centre of the county, being watered by the little river Guash, or Wash.

Wales, though mountainous, is not destitute of vales. The Vale of Mold, in Flintshire, is uncommonly rich and beautiful. But the most celebrated of the Welsh vales is situated partly in Denbighshire and partly in Flintshire, extending on both sides the river Clwyd, whence it takes its name, from its mouth above 20 miles inland. Its breadth varies from 8 to 9 miles. It is inferior, in point of picturesque beauty, to some of the deep glens and romantic valleys in other parts of the principality: but is superior to them all in richness of soil and luxuriance of vegetation. Hence it has been called the Eden of North Wales. It is well cultivated, and is thickly studded with gentlemen's seats, villages and towns. Among the latter are St. Asaph, Denbigh, and Ruthin.

The Vale of Conway, in Caernarvonshire, watered by the river of the same name, a wide, shallow, placid stream, of a dusky hue, is a long, narrow tract, extending from the sea to above Llanrost, admired for its picturesque beauty. It has rich meadows, corn-fields, and magnificent groves. Its verdure and fertility contrast advantageously with the bleak, barren region of Snowdon, rising abruptly above it on the west.

The Vale, or rather Valley, of Festiniog is situated in the north-western angle of Merionethshire. It is rich and beautiful, but small, scarcely exceeding 3 miles in length by 1 in breadth; the village of Maentrog occupies its middle; but it derives its name from the village of Festiniog, situated on a hill at the head of the valley. It is watered by numerous streams that fall from the hills on both sides, and discharge themselves into a beautiful small river. The hills are well wooded.

The Vale of Llangollen occupies part of the eastern district of Denbighshire. It is watered by the Dee, and derives its name from the small town of Llangollen, situated within it. This vale has been the theme of much panegyric; but in richness it is inferior to the vale of Clwyd, and in picturesque beauty to that of Festiniog. The prospect from its east end, where it unites with the great plain of Salop, is, however, uncommonly fine.

The only other Welsh vales requiring any notice are those of Towy and Glamorgan. The former lies in Caermarthenshire, and extends about 30 miles up the county: it is about 2 miles broad, on both sides the river Towy. It abounds in picturesque beauties, seen to the greatest advantage from the celebrated Grongar hill and the castle of Dynevor. The Vale, or, more properly speaking, great level, of Glamorgan extends along the sea-coast of the county, stretching inland 8 or 10 miles. It is by far the most fertile part of South Wales. The soil is excellent, and it is rich in corn, pasture, and inexhaustible mineral treasures.

Besides the vale districts, there are several other extensive level tracts in England which must not be passed over in any descriptive notice, however brief, of the country. The largest plain in the kingdom extends from the banks of the Thames through Essex, Suffolk, and Norfolk, comprehending also a considerable part of the counties which border on these to the west. The road from London to Norwich, by Newmarket, passing along the west of Essex and Suffolk to the middle of Norfolk, a distance of about 108 miles, runs through a more uniformly level country than any other road of the same length in England. Indeed this great plain may almost be said to stretch through Lincolnshire, and, crossing the Humber, to join the vale district of Holderness in Yorkshire.

The Weald of Kent, Surrey, and Sussex forms a very extensive tract of generally level land, though in some places its surface is varied with gentle eminences. Opinions vary as to its exact limits; but it is generally understood to extend lengthwise from the border of Romney Marsh in Kent, to Petworth in Sussex, a distance of from 60 to 65 miles, varying from 8 to 15 miles in breadth, and containing nearly 1,000 square miles, or 640,000 acres. It is bounded, for the most part, by the South Downs on the south, and the chalk hills of Kent and Surrey on the north. The soil is principally clay, partly very stiff and heavy, and partly of a softer and wetter description; but it is interspersed with considerable tracts of clay mixed with sand, and sand and gravel. The sandy soil, in common, indeed, with the whole weald, has been very much improved, particularly by marling. It is mostly in a pretty good state of cultivation; and its pastures are rich and luxuriant. The Britons called it *Coit andred*, the mighty wood; and the Saxons, the *Wyeld*, or *Weald*, that is, the wild forest or chase. It continued for a lengthened period to be an immense forest, occupied only by herds of deer and hogs belonging to the king. It was gradually, however, distributed by royal grants among the surrounding religious houses and manors; the portion assigned to each being called a *den*, *denberie*, or *wealdberie*. At first, these grants were used only for the feeding of hogs (*pannage for hogs*), the soil being supposed to be unfit either for tillage or pasture; but in course of time they were by degrees cleared and brought into cultivation; the districts deriving, for the most part, their peculiar and distinctive denominations from the names of those by whom they were occupied and improved, as Tenterden, Halden, Malden, &c. In the Kentish part of the weald the custom of gavelkind, by occasioning the repeated division and subdivision of estates, has rendered these *dens* very small at present compared with their original magnitude. The soil of this extensive district is peculiarly well adapted to the growth of oak timber; and as every inclosure is surrounded with oak trees, and every wood and coppice is full of them, it still retains its ancient woody appearance. "When viewed from the adjoining hills, which command a prospect over the whole of it, the weald exhibits the most delightful scene that can be imagined. It appears to the eye an extensive level country (the few hills in it being so small and inferior to those whence it is viewed), covered with all the richness of both art and nature: the variety of small enclosures of corn and meadow, and the houses, seats, and villages promiscuously interspersed among the large and towering oaks, which grow over the whole face of it, have the most pleasing effect, and represent to us, even at this time, something, though a great improvement of its original state, in the idea of an inhabited and well-cultivated forest." — (*Hasted's Kent*, 8vo. ed. vol. i. pp. 293—298.; *Campbell's Political Survey*, vol. ii. p. 272.)

The other level tracts that seem to deserve any particular notice are the Fens, Romney Marsh, the Marshes of Somersetshire, and Salisbury Plain. The *Fens*, as they are emphatically termed, lying around the great arm of the sea called the Wash, are situated principally in the counties of Cambridge and Lincoln, but partly also in those of Northampton, Norfolk, Suffolk, and Huntingdon. They form an immense tract of above 400,000 acres. It seems to be sufficiently established by the circumstances mentioned by Dugdale, in his History of Embanking, and by the remains of ancient roads, trees, &c., found under the surface, that most part of what is now called the Great Level of the Fens was, originally, comparatively firm, dry land.* This appears the more singular, as there can be no question that the present surface of a large portion of the Level is a good deal above what it anciently was. — (*Elstobb's Bedford Level*, pp. 32—37, &c.) But this apparent anomaly admits of a pretty satisfactory explanation. It seems sufficiently ascertained that, previously to the invasion of the Romans, the sea at spring tides overflowed very extensive tracts of the low grounds contiguous to the Wash. The greater part of the water that thus overspread the country would be reconveyed to the sea at ebb tide, by the channels of the Ouse, Nene, Welland, and other rivers that run through the fens; and this great addition to the land water would suffice to scour and deepen their channels, and to give them a good outfall. — (*Ibid.* p. 44.) In consequence, the more inland parts of the fens at Thorney, Deeping, Donnington, Downham, &c., were comparatively well drained; and though their surface was lower than at present, it was dry and sound.

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* See Dugdale's "History of Embanking and Draining," cap. 32.; see also extracts from Dugdale and other writers, in Elstobb's "History of the Bedford Level," pp. 3—8, &c.

The Romans were the first who began to exclude the sea, and to confine the rivers by means of embankments. After this had been effected, the quantity of refluent water being materially diminished, the channels of the rivers not being sufficiently scoured, gradually filled up; and the course of the land water being obstructed, it began to stagnate in the upper part of the fens. The evil was increased by the occasional bursting of the sea through its banks, there being hardly any outlet for the water that had entered by the breach.

An evil of this sort would not speedily manifest itself, but would become more and more perceptible as the rivers got encumbered with sand and mud. Henry of Huntingdon, who lived in the reign of King Stephen, describes the country round Thorney in the most glowing terms; and, allowing for a good deal of colouring, it is still sufficiently certain, that its state must at that time have been widely different from what it afterwards became. So early as the reign of Edward I. the evil had attained to such a magnitude, that attempts at drainage upon a considerable scale were commenced. These attempts have been continued ever since. Previously to the Reformation, a large proportion of the fens belonged to rich religious houses; and the drainage seems to have been conducted under their superintendence, with considerable success. But after the suppression of the monasteries, the estates belonging to them came into private hands; and, in the confusion of the times, the dikes and drains were allowed to fall into decay, and the fens got into an extremely bad state.* At length, in the reign of Elizabeth, their recovery began to be viewed in its true light, as a subject of great national importance; and measures were taken in furtherance of that object, which, however, were defeated by the death of the Queen. Many plans were proposed and abandoned between the accession of James I. and 1634, when a charter of incorporation was granted by Charles I. to Francis Earl of Bedford (the proprietor of about 20,000 acres of land in the vicinity of Thorney and other places in the fens), and thirteen other adventurers, who jointly undertook to drain the Level, on condition of their being allowed 95,000 acres as a compensation. After the corporation had expended about 100,000*l.* on the undertaking, the contract with the Earl and his associates was set aside, at the instigation of government, on pretence that the works of the adventurers were insufficient to effect the drainage. The real object of this nefarious proceeding was to pave the way for the Crown interfering in what promised to be a profitable business; and no sooner had the corporation been defeated, than an offer by the King to drain the fens, on being allowed 152,000 acres, or 57,000 more than were to have been allowed to the adventurers, was accepted. But this fraudulent scheme was defeated by the disturbances that soon after broke out; and in 1649, William Earl of Bedford was restored, by the Convention Parliament, to all the rights of his father. The works, which had fallen to decay, were forthwith repaired; and, in pursuance of the plan of the famous Sir Cornelius Vermuyden, the New Bedford river was excavated, and the works prosecuted with so much sagacity and vigour, that in 1653 the Level was adjudged to be fully drained, and the 95,000 acres were awarded to the Earl and his associates. Most of the latter were nearly ruined by the enterprise; the expenses of the drainage having amounted to 400,000*l.* — (*Elstobb*, p. 296.)

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* Campbell's Political Survey, vol. ii. p. 274.

In 1668, a corporation was established (15 Chas. II. cap. 17.) for providing for the maintenance and repair of the works, for assessing the proprietors in the sums required to defray the necessary expenses, and other similar purposes. The corporation, under this act, consists of a governor, six bailiffs, twenty conservators, and commonalty. The officers are elected annually; the commonalty consists of all persons possessed of 100 acres within the Level; a conservator must have 200 acres; and the bailiffs and governors 400 acres each. This body was authorised to levy a tax on the whole 95,000 acres; but only 83,000 acres are vested in the corporation in trust for the Earl (now Duke) of Bedford and others, 12,000 acres having been assigned to the Crown, and 2,000 to the Earl of Portland. Since that period various acts have been passed, explaining, amending, and altering the above. In 1697, the Bedford Level was divided into three districts — North, Middle, and South; having one surveyor for each of the former, and two for the latter; and, in 1753, the North Level was separated from the rest. Still, however, the great outlines of the act of 1668 have been preserved; and it continues to form the basis of the legislation with respect to the fens.

Except within the district subject to the corporation of the Bedford Level, the drainages are mostly everywhere effected by commissioners appointed nearly in the same way as the road commissioners. All proprietors or occupiers of land within the Level are charged with a tax or scot of so much per acre on the land they hold. This tax is collected by a surveyor; and is expended either in clearing or repairing the existing drains, or in making new ones, as the commissioners may order.

The water in the rivers and great artificial cuts is generally above the level of the surrounding lands, being confined to its channel by numerous embankments. The water collected in the land drains and ditches is lifted into these main channels by means of pumps wrought mostly by windmills, but now, in a few instances, by steam-engines. Owing to the porousness of the soil, the water is always oozing, or *soaking*, as it is called, from the higher levels; though this has been in some degree obviated by puddling.

In 1795, an act was passed for improving the outfall of the river Ouse, and for making a cut across the marshes, from Eau Brink to Lynn. But it was not till 1818 that this important work was undertaken. It was completed in about two years; and has proved highly serviceable.

But notwithstanding the vast works that have been undertaken and completed, the drainage of the fens, though far advanced, is still, in many places, very imperfect. Much has been accomplished, but much remains to be done. It is, perhaps, impossible completely to drain the Great Level; but the vast importance of the object points out the propriety of leaving no means untried that afford any reasonable prospect of its accomplishment. This also will, we hope, be deemed a sufficient apology for the length of these details.*

Romney Marsh, in Kent, an extensive tract of level and mostly rich land, occupies its south-east angle. What is strictly included under this appellation comprises about 24,000 acres: but when it is described, as it generally is, in connection with the Welland Marsh, containing about 16,500 acres, which adjoins it on the south-west; Denge Marsh, containing about 3,000 acres, which unites with the latter on the south-east; and Guilford Marsh, in Sussex, containing about 3,200 acres; its extent may be taken at about 46,700 acres.

The soil of this spacious level is not all of the same quality. In some parts, particularly near the sea, it is poor sandy gravel; but by far the largest portion consists of a soft, unctuous clay, mixed with a greater or less proportion of sea sand, and is uncommonly rich and fertile.

In summer when the marsh is clothed with luxuriant verdure, and covered with numerous flocks of sheep and herds of cattle, its appearance from the adjacent heights is at once rich and beautiful. It differs from the fens in this,—that it was not recovered, like the latter, but wrested from the sea. At what period the process began is not accurately known. It is probable, however, that considerable parts of the marsh were gained during the early part of the Saxon period of our history. Somner, in his discourse concerning Roman ports and forts in Kent, produces a charter of marsh land by Plegmund, archbishop of Canterbury, from the year 889 to 915; and this charter does not seem to have been one of the first. The clergy indeed, were deeply interested in gaining these lands, being owners of most part of the property in their vicinity; and the practice of *inning*, as it is called, that is, of wresting land from the sea, is commonly supposed to have originated with them. The archbishops of Canterbury, in particular, appear to have sedulously applied themselves to this object, giving their names to such parts of the marsh as they respectively gained. Hence we have Becket's, Baldwin's, Boniface's, Peckham's, &c., innings.—(*Campbell's Survey*, vol. i. p. 404.) The marsh is prevented from being overflowed at high water, by an immense embankment between Hythe and Romney, called Dymechurch Wall, from its contiguity to the village of that name. This wall forms a highway for carriages along its whole extent. Its perpendicular height from the marsh is, in most parts, from 12 to 18 or 20 feet. The slopes are steep, and pretty regular. Next the sea, it forms a shelving irregular beach, carried out to the distance of more than 100 yards. The width of the top of the wall is from 15 to nearly 30 feet. Its length is rather more than 3 miles. Arched sluices, that pass under the banks, each having two pair of flood-gates, effect the drainage. At ebb tide the waters make their escape through the gates, which are so contrived that they prevent the sea from entering at high water.

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* An immense number of Reports, &c., have been published on the Drainage of the Great Level. One by Mr. Smeaton was published in 1768. For further particulars the reader is referred to Elstobb's "History of the Bedford Level;" Vancouver's "Survey of Cambridge;" Gough's edition of Camden's Britannia, &c.

There are very few trees or hedges in the marsh: the fences consist mostly of ditches and rails; great quantities of wood for the repair of the latter being every year brought from the Weald and other parts of Kent and Sussex. A good deal more land is now ploughed than formerly; but it seems very doubtful whether this extension of tillage has been in any respect an advantage. It is very thinly inhabited. It has been said of the air, that "it is bad in winter, worse in summer, and at no time good; being fit only for those vast flocks of sheep which feed all over it." The inhabitants are few in number, and mostly poor; being generally labourers employed to look after the grounds, sheep, and cattle of the owners and occupiers of the land, who live without the marsh.

According to ancient custom, confirmed by charter of the 1st of Edward IV., the inhabitants of the marsh are formed into a corporation, consisting of a bailiff, twenty-four jurats, and the commonalty, who are empowered to purchase lands and tenements, to have a common seal, and to hold a court once every three weeks, for the decision of all suits, real and personal, civil and criminal, arising within the marsh; and they are further empowered annually to choose from among themselves four justices of the peace and a bailiff, to whom all writs are returnable, who have the benefit of all fines, &c., and to whom the regulation of the police of the marsh is exclusively committed. But this body has nothing to do with the drainage of the marsh, or the repair of the walls by which it is defended from the sea. This is intrusted, by ancient custom, to the lords of the 23 manors in and adjoining the marsh, who, with the bailiff and jurats of the corporation now mentioned, who have one vote, are usually called *lords of the marsh*. The bailiff appointed by these lords as chief supervisor of the works is, for the most part, also the bailiff appointed by the corporation of the marsh; the jurats of which are also appointed by the lords to inspect the drains and sewers, the walls, &c., and to attend to the levy of the duties, and all other matters relating to the drainage.

The lords of the marsh and the corporation hold their courts, for the above purposes, in New Hall, Dymechurch. The sums required for the repair of the wall, and the maintenance of the drainage, are raised by a tax or scot per acre, distributed over the whole level; but the Welland and Denge marshes are each taxed separately, to defray their own expenses. The whole of the ancient legislation of England, as to marshes and sewers, is, in all its essential parts, modelled on that established in Romney Marsh.—(*Hasted's History of Kent*, 8vo. ed. vol. viii. pp. 465—467.)

The marshes or fen lands of Somersetshire are of very considerable extent and importance. They lie in the middle of the county, having the Mendip hills on the east, the high lands about Somerton, Petherton, and Ilminster on the south, the Quantock hills on the west, and the Bristol Channel on the north. They are traversed by the rivers Ax, Brue, and Parret, and are divided into various districts differing in elevation and soil; the latter consisting in some parts of mud and alluvial deposits, in others of strong deep clay, and in others of turf bog, &c. The religious houses that were early established in this county, among which the monastery of Glastonbury was the most eminent, having acquired large possessions in the fens, made the most meritorious efforts for their improvement, by cutting drains to carry off the waters, constructing dikes and sluices to prevent the overflow of the adjacent country, and carrying causeways of stone and gravel through what had previously been almost impassable morasses. — (*Campbell's Survey*, vol. i. p. 333.) After the dissolution of the religious houses, the works they had constructed seem to have gone to decay. Latterly, however, great efforts have been made to improve the drainage of the fens. The great difficulty has been to get a proper outfall; and to prevent the inundation of the low land by the rivers, during floods and high tides. For this purpose, many extensive, though not very deep, cuts have been made, sluices contrived, and embankments erected along the banks of the rivers and the sea shore. In consequence, a great deal of most excellent land, that was comparatively useless at no distant period, has been partly rendered fit for tillage, and partly and principally converted into very valuable meadows. Still, however, it must be admitted that the drainage of the low grounds is in many places far from complete; and extensive tracts are yet not unfrequently laid under water.

In point of fertility, the low grounds of Somersetshire are equal to any in the kingdom. They yield the most luxuriant pasture; and some of them, when ploughed, have been known to produce in succession, and without the intervention of either a fallow or a green crop, from 12 to 20 heavy wheat crops! The only manure given to land so treated is that which is got by cleaning the surrounding ditches. — (*Billingsley's Survey of Somerset*, p. 177.)

The drainages are managed by commissioners, nearly in the same way as those of Romney marsh.

Salisbury Plain, in South Wiltshire, is one of the most remarkable tracts in the kingdom. It is oval shaped, extending lengthwise, from Warminster on the west, to North Tidworth on the east, about 22 miles; and from East Lavington on the north, to Old Sarum on the south, about 15 miles. This extensive tract consists of a sort of elevated table land of a chalk formation. At a distance it has the appearance of a large plain; but, on a closer inspection, it is found to be traversed by numerous and sometimes pretty extensive valleys, and has almost everywhere a billowy surface. Around the stupendous relics of Stonehenge it is, however, comparatively level; no habitations are near; and nothing is to be seen, except vast flocks of sheep attended by their shepherds. The soil is generally thin, light, and, like all chalky lands, has its usual accompaniment of flints. It is mostly covered with a fine green sward, that affords excellent pasture for sheep, for the feeding of which it is peculiarly well adapted. Mr. Young appears to have formed an exaggerated idea of the fertility of this plain, and the advantages that would result from dividing it into arable farms, and subjecting the down land to cultivation. — (*Southern Tour*, 2d ed. p. 200.) Since the period when he visited this part of the country, the "greedy plough," influenced by the high prices obtained for corn during the war, has "preyed largely on its carpet." This, however, has not generally proved a profitable course. Good crops were at first obtained; but the land, being thin and loose in its staple, speedily wears out; and, when laid down to grass in an exhausted state, is worth little or nothing. Hence, tillage on the down lands requires to be judiciously managed; and there should always be a stock of sheep sufficient, by means of folding or otherwise, to keep up their fertility.

Marlborough Downs, an extensive tract adjoining Salisbury Plain on the north-east, is in all respects similar to the latter, except that its surface is more uneven. The Hampshire Avon, flowing to the south; the Kennet, flowing to the east; and some of the feeders of the Lower Avon, flowing to the west; have their sources in Salisbury Plain and Marlborough Downs. This is a sufficient proof of the general elevation of the ground. The Kennet and Avon Canal, at Crofton Tunnel, between Salisbury Plain and Marlborough Downs, is elevated 474 feet above the level of the sea at low water mark. Westbury Down, on the west side of Salisbury Plain, is 775 feet above the sea level. The general elevation of the plain may be from 400 to 500 feet.

SECT. 5.—*Rivers, River Ports, and Lakes.*

The most celebrated and important of the rivers of England are the Thames, Severn, Trent, Mersey, Ouse, Dee, Tyne, Tees, and Medway. We, therefore, purpose giving a brief account of the sources, course, and termination of the above rivers, and of their most important tributaries; subjoining a few short notices of some of the smaller and less celebrated streams. According to Camden, there are, in England and Wales, upwards of 550 rivers and rivulets distinguished by particular names.

Thames, &c.—The sources of this noble river—the most important, in a commercial point of view, in the world—are generally admitted to be from rivulets that rise in different parts of the Cotswold hills, named the Lech, the Colne, the Churne, and the Isis. The last, which is the most important and retains its name the longest, has its source in Gloucestershire, on the borders of Wiltshire, a little to the south-west of Cirencester. It flows easterly by Cricklade; and being augmented by the other streams, it becomes navigable for barges at Lechlade, on the borders of Gloucestershire and Berkshire. Its course is thence north-easterly, till, being further augmented by the Windrush and the Evenlode, from the borders of Gloucestershire, it turns, a little to the north of Wytham House, to the south. After passing Oxford, it bends suddenly to the west by Nuneham Park to Abingdon. Having again resumed its southerly direction, it is joined, a little below Dorchester, in Oxfordshire, by the Thame.

This river has several sources, of which the most remote are in the central parts of Buckinghamshire, near Kreslow and Wendon Lodge. They unite at Thame, in Oxfordshire; from which point, to where it joins the Isis, the river is navigable.

After the junction of the Isis and the Thame, the combined river obtains its proper name of Thames, *i. e.* Thame-isis. From Wallingford, a little below the point of concourse, the river flows almost due south, till, passing Basildon Park, it turns east to Reading, where it is joined by the Kennet. It then flows north-east to Great Marlow; thence south to Maidenhead, and south-east by Windsor and Staines, till it receives the Wey. Its course is then easterly with many bold sweeps to London; and flowing through the metropolis, and being augmented by the Lea from Hertfordshire, and the Darent, it continues its course easterly till it unites with the sea at the Nore light, 45½ miles below London Bridge.

The distance from London Bridge to Lechlade, where the Isis becomes navigable, following the windings of the river, is 146½ miles; the total rise from low water mark at the former to the latter being about 258 feet. This ascent is overcome by means of several locks, constructed at different periods, of which the first is at Teddington, 18¾ miles above London Bridge; this, consequently, is the limit to which the tide flows. The low water surface of the river from Teddington Lock to London Bridge falls about 16 feet 9 inches, or about 10¾ inches a mile at an average. The high water mark at Teddington is about 1 foot 6 inches above the high water mark at the bridge, and the time of high water is about 2 hours later. The average fall in the *bed of the river*, from Teddington to London Bridge, is about a foot a mile; the breadth of the river at London Bridge is 692 feet.

Though not a rapid, the Thames is by no means a sluggish river; it rolls forward with an equable and steady current, and is remarkable for the purity of its waters. It has been most admirably described by Denham in his Cooper's Hill:—

> "Though deep, yet clear; though gentle, yet not dull;
> Strong without rage; without o'erflowing, full."

But it is as a navigable and commercial river, having London on its banks, and bearing on its bosom numberless ships fraught with the produce of every country and every climate, that the Thames is principally distinguished. Its depth of water is so great, that, as a shipping port, London enjoys peculiar advantages; even at ebb tide there is from 12 to 13 feet water in the fair way of the river above Greenwich; and the mean range of the tides at London Bridge is about 17 feet, while the range at the extreme springs is about 22 feet. The river is, in fact, navigable as far as Deptford for ships of any burthen; to Blackwall for those of 1400 tons; and to the St. Katherine's Docks, adjoining the Tower, for vessels of 800 tons. As already stated, it is navigable by barges to the confines of Glocestershire; and the navigation is thence continued by canals through Cirencester and Stroud to the Severn; but the usual water communication between London, Bath, and Bristol is by the Kennet and Avon canal, and the Kennet, which unites with the Thames at Reading. The conveyance of goods by this channel usually occupies about seven days; and the navigation is besides exposed, particularly between Reading and London, to much interruption from droughts, floods, &c.

The whole course of the river, from its source to the Nore, is reckoned at from 205 to 210 miles.

The removal of the old London Bridge has caused a considerable change in the river above, and also, though in a less degree, below the bridge. Owing to the contracted arches through which the water had to make its way at the old bridge, there was a fall of from 4 feet 9 inches to 5 feet at low water; this fall is now reduced to about 2 inches; so that the low water line above the bridge is nearly 5 feet lower at spring tides than formerly. In consequence, a greatly increased body of tidal water now flows up and down the river; and as it meets with no obstruction, it flows with a decidedly greater velocity. The effect of this is to scour and deepen the channel of the river; its influence in this respect being already sensibly felt as far up as Putney Bridge, 7¼ miles above London Bridge. The shores above the latter, that were formerly foul and muddy, are now becoming clean shingle and gravel, and near low water the beach is quite hard and firm. The shoals are also decreasing below the bridge; and there can be little doubt that the change will, at no distant period, be felt from the Nore up to Teddington.

Before the removal of the old bridge, a barge, starting from the pool with the first of the flood, could not get farther than Putney Bridge without the assistance of oars. But, under similar circumstances, a barge now reaches Mortlake, 4 miles farther up, before using oars, and with a little help she may reach Richmond; and taking horses there, may get to Teddington in a tide. The descent down the river has been equally facilitated; the mean velocities of the flood and ebb between London Bridge and Westminster Bridge, are flood, 3 miles an hour, extreme, 3½; ebb, 3⅙, extreme, 3¾.*

Of the tributaries of the Thames, the Kennet, Wey, Lea, and Darent only are navigable, and are, therefore, the only ones that we need notice. "The Kennet swift, for silver eels renowned," rises on Marlborough Downs, in Wiltshire, and, pursuing an easterly course, falls into the Thames at Reading. It has been made navigable as far as Newbury; whence the canal previously mentioned is carried by Devizes and Bradford to Bath and Bristol. The Wey falls into the Thames near Oatlands; it has its source in the eastern part of Hampshire, and has been rendered navigable from Godalming to the Thames, a distance of about 20 miles. The first navigation locks used in England are said to have been constructed on this river. The Lea rises in the chalk hills near Luton, in Bedfordshire; and, pursuing a southerly course, falls into the Thames near the East India Docks. It has been made navigable, by collateral cuts and otherwise, as far as Hertford. This navigation, which is of considerable importance, began to command the attention of the legislature so early as 1425, in the reign of Henry VI. It has not even yet, however, received all the improvement and extension of which it is capable. — (*Priestly on Inland Navigation, &c.* p. 411.) The Darent has its source near Westerham, in Kent; it falls into the Thames about four miles below Dartford, to which it is navigable.

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* We are indebted for these details to John Smeaton, Esq., assistant to Messrs. Rennie, the engineers.

The *Medway* can hardly be called a tributary of the Thames; but as it falls into the æstuary of the latter, it may be most properly noticed in this place.

The Medway was called by the ancient Britons *Vaga*, to which the Saxons prefixed the syllable *Mad*, signifying mid or middle, because it ran through the middle of the kingdom of Kent: hence it came to be called Medweg, and latterly Medway. — (*Hasted's Kent*, 8vo. ed. vol. i. p. 273.)

This important river rises in the south-east corner of Surrey, between the north and south chalk ranges; being joined at Penshurst Place by streams from the north of Sussex. Its course is thence north-east to Maidstone, and then north to Rochester and Chatham; about two miles below which it turns nearly east, expanding at the same time into a wide æstuary interspersed with islands. After prosecuting an easterly course for 8 or 10 miles, it turns once more to the north, falling into the mouth of the Thames at Sheerness. The tide is interrupted by locks, otherwise it would flow up the river to Maidstone. In consequence of works begun in the reign of Charles II., and resumed at different subsequent periods, it has been rendered navigable as far as Tonbridge; affording a channel of communication of much importance to the surrounding country. From Sheerness to Chatham there is water to float the largest ships; and the ground being soft, and the reaches short, it forms an admirable harbour for men-of-war, many of which are usually laid up here when out of commission. The arsenal at Chatham is one of the most important in Great Britain. Considering the shortness of its course, the Medway is one of the deepest of European rivers.

In 1667, the Dutch, under De Ruyter, took Sheerness; and, sailing up the river as far as Chatham, destroyed several sail of the line and a great quantity of stores. They accomplished this daring and brilliant achievement without incurring any material loss; but the fortifications were soon after so much improved and strengthened, as to render a *coup de main* of this sort no longer possible.

The Stour, the Colne, and the Chelmer fall into the mouth of the Thames at different points on the Essex coast. The Stour rises near Haverhill, on the confines of Essex, Suffolk, and Cambridgeshire. Having passed Sudbury, to which it is navigable, and Manningtree, it falls into the mouth of the Thames at Harwich. The harbour of the latter is of great extent, and has sufficient water to float ships of the largest class; but the access to it is a good deal obstructed, so that a pilot should be always employed. The entrance to the harbour is marked by two lighthouses. The Colne is navigable from Colchester to the mouth of the Thames; and the Chelmer from Chelmsford to the æstuary of the Blackwater, and thence to that of the Thames.

The basin of the Thames, that is, the country drained by it and its tributary streams, including the Medway, is of large extent, and is exceedingly populous: it comprises the greater part of Kent, with the whole of Surrey, Berks, Oxford, Bucks, Herts, Middlesex, Essex, and Suffolk, with part of Gloucester and Wilts, — being an area of about 8,500 square miles, containing, in 1831, about 3,500,000 inhabitants;

so that on this space, including between one sixth and one seventh part of the surface of England and Wales, is accumulated between a third and a fourth part of their inhabitants, and decidedly more than the third part of their wealth.

This statement seems sufficient to show that the fears of those who anticipate any great falling off in the trade of London must be, in a great degree, imaginary. The foreign trade of Liverpool, Glasgow, and Hull, particularly the first, from their situation in the coal and manufacturing districts, may, it is to be fairly presumed, continue, as it has done for the last half century, to increase more rapidly than that of the metropolis. But we do not think that there is much reason to apprehend any material falling off in the trade of the latter. The great population and vast wealth of the basin of the Thames seem quite sufficient, exclusive of its advantageous situation, to insure the ascendency of London as an immense commercial entrepôt.

Severn, &c.— The Severn, the second river in the kingdom in point of magnitude, and perhaps, also, in importance, has its principal source in a small lake on the eastern side of Plynlimmon mountain, in Montgomeryshire. At its outset it is called the Hafren; the name by which, through its whole course, it was known to the Britons. It flows first towards the south-east, and afterwards turns to the north-east as it approaches Newton, where it takes the name of Severn. Hence, through the vale of Montgomery, its course is almost due north; till, entering the great plain of Salop, beyond Welshpool, it turns abruptly to the south-east; and pursuing the same direction, it almost encircles Shrewsbury. Flowing through Colebrook Dale, and passing Bridgenorth, it follows a southerly course as it leaves Salop, and enters Worcestershire at Bewdley. Being now become a broad and deep river, crowded with barges, it rolls through a pleasant country in a tranquil stream, passing the city of Worcester, and traversing the vales of Evesham and Gloucester. In the latter it divides into two channels, one of which washes the walls of Gloucester; but, being again united, it forms a great tidal river. Its course from Gloucester to Nass Point is tortuous; from the latter it flows south-west, till it assumes the name of the Bristol Channel, expanding and insensibly losing itself in the Atlantic Ocean.

The Severn, particularly below Gloucester, has frequently overflowed its banks, and occasioned much damage to the surrounding country. It is remarkable for its tide, which rushes in with a head 4 or 5 feet high, and a loud noise. This, no doubt, arises from the wide expanse of the waters of the Atlantic in the Bristol Channel being gradually narrowed, till at length they are forced violently up the river. Outside the Bristol Channel, spring tides rise from 22 to 24 and 26 feet; but in King's Road, at the mouth of the Lower Avon, they rise to the height of 48 feet, and sometimes more; and at Chepstow the rise is 60 feet.* The opposition which the current from the sea meets with from the adverse current of the river occasions that dashing and grinding of the waves known by the name of *hygre* or *eagre*.

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* Norie's Sailing Directions for the Bristol Channel, p. 20.

The Severn is navigable from the Flatholm Lighthouse, where it loses itself is the Bristol Channel, to Welshpool — a distance of about 178 miles; and its navigation is continued by the Montgomery canal to Newton. It is, consequently of the highest importance as a channel of internal communication; its capacity in this respect being materially increased by its numerous large tributary streams, and by the canals and railroads that join it. By means of the latter, it commands a large share of the commerce of Birmingham, and of the various trading towns of Staffordshire, Warwickshire, &c.; and is united with the Thames, the Trent, and the Mersey. From Welshpool to the sea it has a gradual fall of 225 feet. — (*Priestley on Inland Navigation, &c.* p. 596.)

The navigation of the Severn from Nass Point to Gloucester is both tedious and difficult. To obviate this inconvenience, a canal on a large scale has been dug from Berkeley-pill to Gloucester. It is 18½ miles long, from 70 to 90 feet wide, and from 15 to 18 feet deep; and may consequently be navigated by vessels of 350 tons. There is a basin at each end for the accommodation of shipping. This canal, which was opened in 1827, has become the channel of an extensive commerce; and Gloucester is now rising fast in importance as a trading and shipping town.

The barges which navigate the Severn are about 120 feet in length, from 19 to 20 in breadth, and 5 in depth. They carry above 100 tons. The trows are from 60 to 70 feet long, 20 broad, and 5 deep, carrying 75 tons. They carry a square-sail, and have a mainmast and topmast.

Of the tributaries of the Severn, the most important are the Teme, the Upper and Lower Avon, the Wye, and the Usk. The Teme, rises in the mountains which divide Radnor and Montgomery shires; and, pursuing a south-easterly course, joins the Severn near Worcester.

The Upper Avon rises on the confines of Leicestershire and Northamptonshire, about 300 feet above the level of the sea. It flows in a south-westerly direction, but with a very winding course, through Warwick, Stratford-on-Avon, and Evesham, falling into the Severn at Tewkesbury. It has a large body of water; and is navigable by barges for about 40 miles, or from the Severn to Stratford, where it is joined by the Stratford canal.

The Lower Avon has its source near Malmesbury, in North Wiltshire. Its course is circular, passing Chippenham, Bradford, Bath, and Bristol. As a shipping and commercial town, Bristol used to be second only to London; but though now far surpassed by Liverpool, and also by Newcastle and Hull, it is still a place of great trading importance. It is situate about 8 miles above where the Avon falls into the Bristol Channel; but, owing to the great rise of the tide, the largest class of merchantmen reach the quays without difficulty. A lateral canal accompanies the river from Bristol to Chippenham.

The Wye, the largest of the tributaries of the Severn, is justly celebrated for its romantic and beautiful scenery. It rises on the south side of Plynlimmon, near the source of the Severn; and pursuing a south-easterly winding course, falls into the latter a little below Chepstow. It is navigable for barges from its mouth as far as Hay, in Brecknock — a distance by water of about 100 miles; but the navigation in the upper parts of the river is liable to much interruption, sometimes from a scarcity of water, and sometimes from floods. The latter are occasionally so violent as to make considerable alterations in the bed of the river. Its principal tributaries are the Lugg and the Munnow. Owing to its being the entrepôt of the country traversed by the Wye, Chepstow has a good deal of trade. The tide, as already mentioned, rises here to the extraordinary height of 50 or 60 feet, and sometimes more. Vessels of the largest burthen may consequently come up to the town. Owing, however, to the violence of the ebb and flow, the navigation is rather dangerous.

The Usk rises in Brecknockshire; and, taking an east and south course, falls into the Severn about 4 miles below Newport. It is navigable to the latter for the largest ships. The Brecon and Abergavenny canal terminates at Newport; and it also communicates with various railroads. In consequence, partly of this command of internal intercourse, and partly of the rapid increase of iron-works in Monmouthshire, Newport has become a place of considerable commercial importance.

Besides the affluents now mentioned, the British Channel or embouchure of the Severn, receives the rivers that drain Glamorganshire, Caermarthenshire, and the greater part of Pembrokeshire. Of these the Taaf, the Neath, and the Towey are the most important; but with the exception of the latter, which is navigable as far as Caermarthen, none of them seems to require any particular notice.

On its southern side, the Bristol Channel receives the rivers of Somersetshire. Of these, the Parret is by far the most important. It rises a little to the south-east of Crewkerne, on the borders of Dorsetshire, and, flowing northwards, is joined by the Yeo or Ivel, which passes through Ilchester; and by the Thone, which passes through Taunton. The Parret is navigable for vessels of 200 tons burthen to Bridgewater; the Yeo, or Ivel, is navigable as far as Ilchester; and a canal has been cut from Bridgewater to Taunton.

It is clear, from these statements, that the basin of the Severn is of great extent and importance. It includes the counties of Somerset, Worcester, Warwick, Salop, Montgomery, Radnor, Hereford, Monmouth, Glamorgan, Brecknock, Caermarthen, with the greater part of Gloucester, Pembroke, and part of Wilts. Its total area may be taken at about 11,600 square miles, having, in 1831, a population of about 2,150,000.

Trent, &c. — With the exception of the Thames and Severn, the Trent is by far the most important of the rivers of England, on account not only of the length of its course, but of the fertile districts through which it passes, the immense number of canals with which it communicates, and the considerable rivers it receives in its progress.

This fine river has its source near the Cheshire border, in the moorlands of Staffordshire, about four miles north from Burslem. At first its course is nearly south-east, when it makes a sudden turn by the east to the north, near Burton-on-Trent. It afterwards divides Leicestershire from Derbyshire; and pursuing a north-easterly course by Nottingham to Newark, it turns more and more to the north. After dividing Nottinghamshire and Lincolnshire, and passing Gainsborough, it enters Lincolnshire at West Stockwith; and flowing north, with a little inclination to the east, unites with the great æstuary of the Humber, at a place called Trent-falls. It may be navigated by vessels of 200 tons as far as Gainsborough, and by barges as far as Burton-on-Trent — a distance of about 117 miles; having in this lengthened course a fall to low-water mark of only 118 feet, or very nearly a foot per mile. From Burton-on-Trent to its source, the rise of the river is about 376 feet; at least the summit level of the Caldon canal, which passes near the head of the Trent, is 494 feet above the sea. — (*Priestley's Map of Canals, &c.*)

Of the subsidiary streams that fall into the Trent, the most considerable are the Blythe, Tame, Dove, Derwent, and Soar; but of these it is only necessary to notice the last two. The Derwent rises in that part of Derbyshire called the High Peak; after passing Matlock, Cromford, and Derby, it has a circuitous course from the latter to Wilden Ferry, where it unites with the Trent. It is navigable as far as Derby, about 13 miles; but it has been superseded, as a channel of communication, by the Derby canal. The Soar rises east from Hinckley, in Leicestershire: it flows through a rich grazing country, and more than half encompasses the ancient town of Leicester. After receiving the Wrake, its course is north, with a little inclination to the west, till, passing Loughborough, it falls into the Trent near Cavendish Bridge. It is navigable to near Loughborough, a distance of about 7 miles.

The canals that communicate with the Trent are of the greatest importance; assisted by them, it affords an easy means of export for the manufactures of a large district of Lancashire; the salt of Cheshire; the produce of the Potteries of Staffordshire; the coal of Derbyshire; and the agricultural products of Nottinghamshire, Leicestershire, and Lincolnshire. It also opens a communication with the sea by way of Lincoln and Boston; through which channels, as well as the Humber, the articles above enumerated are conveyed; and in return, the interior of the country is supplied, either by Hull and Gainsborough, or Boston and Lincoln, with such commodities as are required by an immense population.—(*Priestley's Treatise on Rivers, Canals, &c.* p. 681.)

Ouse, &c. — The Ouse is of very inferior magnitude compared with the Thames, the Severn, or the Trent. But if we consider it as representing that combination of rivers which join it before it falls into the æstuary of the Humber, all of which communicate with highly important canals, it will be found to rank in the very first class as a commercial channel. The Swale, the remotest branch of the Ouse, has its source in the mountain of Shunnor Fell, on the borders of Yorkshire and Westmoreland, one of the most elevated in the great central range. Pursuing a south-easterly course, it is joined at Boroughbridge by the Ure, from Askrig, Middleham, and Ripon. A little lower down, at Linton, the Swale loses its original name and takes that of the Ouse. At Benningborough Hall it is joined by the Nidd; and near Cawoode by the Wharfe, which, flowing through Tadcaster, has its source near Arncliffe. At Barnby on the Marsh, the Ouse receives the Derwent, flowing from the eastern Yorkshire moors, 12 miles north-west of Scarborough. A little lower down, near Howden, it is joined by the Aire. This river, so important from its navigation and canals, rises in the central ridge, a little to the east of Settle. It pursues a south-easterly course, till, passing Leeds, it is joined by the Calder at Castleford; its course is thence easterly, with a good many windings. From Leeds to Ferrybridge, the Aire flows through one of the richest plains in the kingdom. At the new and important port of Goole the Ouse is further augmented by the Don. The latter rises in the high moors near the confines of Derbyshire; passing Sheffield, Rotherham, Doncaster, and Thorne.

The Ouse itself is navigable for considerable vessels as far as York, and for barges to Linton. The Derwent, the navigation of which is the private property of Earl Fitzwilliam, has been rendered navigable by locks and otherwise for a distance of about 49 miles. When the improvements in the Aire and Calder navigation are completed, the depth of water will be sufficient to admit vessels of 100 tons burthen to Leeds and Wakefield; and vessels from thence will reach Goole in 8 hours, and from Manchester within 45 hours. The Don is navigable as far as Tinsley, and a canal, 4 miles in length, has, within these few years, been made from the latter point to Sheffield, to which it is of the greatest utility.

The basin of the Humber, or the country drained by the Trent, Ouse, and other rivers that fall into the great æstuary between Yorkshire and Lincolnshire, embraces an extent of about 10,000 square miles, comprising some of the most fertile and populous districts in the kingdom. It includes almost the whole of Yorkshire, with the counties of Leicester, Nottingham, Derby, Stafford, and about a third part of Lincoln. Its principal port is Hull, on the north side of the Humber, at the mouth of the river of the same name. As a commercial emporium, Hull occupies the third place in the kingdom, taking rank immediately after Liverpool. At Spurn Point, at the mouth of the Humber, spring tides rise about 23, and neaps about 14 feet, while at Hull the rise of the former is about 22, and of the latter about 13 feet; and as there is, even at low ebb, a considerable depth of water in the fair-way of the channel, the port may be entered by the largest class of merchantmen. The rapidity of the tides, and the numerous sandbanks, render the navigation of the Humber a little difficult.

Goole, situated on the Ouse at its junction with the Don (there called the Dutch River), about 22 miles more inland than Hull, promises to be a formidable rival to the latter. It has grown up within the last ten or twelve years, and is provided with docks, bonded warehouses, &c. The difficulty of the navigation is the principal drawback on Goole; but vessels drawing 15 and 17 feet water have, by taking advantage of the tide, reached it in safety.

Great Grimsby is the principal port on the Lincoln side of the Humber. The harbour, which was formerly nearly choked up, has latterly been materially improved; and there is good anchorage in the roads.

The shores on both sides the Humber have been very much changed within the period embraced by authentic history. "All the northern parts of Lincolnshire have been gained from the sea. Barton and Barrow have not, at present, the least appearance of ports; yet by Hollinshed they were styled good ones. Similar accidents have befallen the upper part of the low tract of Holderness, which faces the congruent shores. Hedon, a few miles below Hull, several hundred years ago a port of great commerce, is now a mile and a half from the water, and has given way to the rising fortune of the latter (a creation of Edward I., in 1296), on account of the excellency of its port. But in return the sea has made ample reprisals on the lands of this hundred: the site and even the very names of several places, once towns of note upon the Humber, are now only recorded in history. Ravenspur, at one time a rival to Hull, and a port so very considerable in 1332 that Edward Baliol and the confederated English barons sailed from it with a great fleet to invade Scotland, has long since been devoured by the merciless ocean. Extensive sands, dry at low water, occupy the place of these towns. Till about 1666, the district called Sunk Island appeared among these sands like an elevated shoal; when it was regained, by embankments, from the sea, and now forms a considerable estate, probably restored to its pristine condition."—(*Introd. to Pennant's Arctic Zoology*, p. 12.)

Mersey, &c.—Though not a large river, the Mersey has, from its flowing through the principal manufacturing district in the empire, and giving its name to the gulf or arm of the sea between Lancashire and Cheshire, become, in point of commercial importance, second only to the Thames. It has its sources in the great central ridge on the confines of Cheshire and Derbyshire; and, after passing Stockport, is joined by the Irwell. The latter, which has its source in the Lancashire moors, near Haslingden, flows south, through Bury, to Manchester, where, being joined by two smaller streams, it takes a westerly course, till its confluence with the Mersey. After being still further increased by the Bollen, from Macclesfield, the Mersey passes Warrington; a little below which, it expands into a spacious æstuary, having the great commercial port of Liverpool,—the grand emporium of the cotton manufacturing district,—near its junction with the Irish Sea. The Mersey and Irwell have been rendered navigable from Sankey Bridge to Manchester. Owing to the numerous windings in the rivers, the length of this navigation may be reckoned at about 50 miles; but it has been a good deal shortened by cutting across the bends.

The Weaver falls into the æstuary of the Mersey, about 2 miles below Frodsham. It rises on the borders of Salop and Cheshire, flowing in a northerly direction through the central parts of the latter, by Nantwich, Winsford, Northwich, and Frodsham, to the sea. It has been rendered navigable, by means of collateral cuts, locks, &c. from the æstuary of the Mersey, at Weston Point, to Winsford Bridge, a distance of above 22½ miles. It falls in this space 50 feet. Vast quantities of rock salt, coal, timber, &c., are conveyed by this navigation, which is both important and lucrative. Besides receiving the above and some other considerable rivers, the æstuary of the Mersey is connected, by means of numerous canals, with all the great manufacturing towns of Lancashire, Yorkshire, Staffordshire, and Warwickshire, as well as with the ports of Hull, London, and Bristol.

Dee. — This river has its source in Merionethshire, in Bala Lake, the largest in Wales. At first it pursues an easterly course, through the beautiful Vale of Langollen, till it passes Wynne-Stay. It there takes a northerly direction, separating the counties of Flint and Chester. It enters the latter a little to the south of Eaton Hall; and, having nearly encompassed the ancient city of Chester, is conveyed by an artificial channel to its æstuary.

At the era of the Conquest, and for many years after, Chester was a place of very considerable importance, as a shipping and commercial port. In this respect, indeed, it was decidedly superior to any port on the west coast of England, with the exception of Bristol. For several centuries it engrossed the principal part of the Irish trade; and it had also an extensive intercourse with the south of France, Spain, and the Mediterranean. But the gradual filling up of the channel of the river proved in the end destructive of its trade. Towards the close of the seventeenth century, the navigation was so much obstructed, that vessels of 20 tons burthen could with difficulty arrive at the quays; so that the shipping and trade of the port were almost entirely transferred to Liverpool, which had then begun to emerge from obscurity. The celebrated Andrew Yarranton, in a work published in 1677, suggested a plan, intended to accomplish the double object of restoring Chester to her ancient commercial importance, and recovering a large tract of land in the æstuary of the Dee, by cutting a new channel for the river.* But, though an act for this purpose was obtained in the reign of William III., the project was not carried into effect till 1737, when a new channel was formed from the city to near Wepre Hall, on the south-west side of the æstuary of the Dee, being a distance of about 8 miles. The distance thence, by the low-water channel, passing Park Gate, to the opening into the Irish Sea, off Great Hilbree Island, is 15½ miles.

Ships of about 300 tons ascend to the city by means of this cut; and, by confining the waters of the river, a large extent of valuable land has been recovered from the sea, embanked, and cultivated. This, indeed, has been the most valuable result of the undertaking; for, owing to the superior facilities enjoyed by Liverpool as a shipping port, the trade and navigation of Chester continue to be of very secondary importance. — (*Pennant's Tour in Wales*, 8vo. ed. vol. i. p. 258.; *Priestley's Map of Canals, &c.*)

Tyne. — This important river is formed of two very considerable streams — the North and the South Tyne. The latter rises on the borders of Durham and Cumberland, near Cross Fell, one of the highest mountains in the great central range; and the former in the moorlands of Northumberland, close to the Scottish border. They unite a short way from Hexham. After their junction, the river takes an easterly direction; and, passing Newcastle, falls into the sea at Tynemouth, having the towns of North and South Shields close to its embouchure.

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* England's Improvement by Sea and Land, part i. p. 191.

The Tyne is navigable for large ships as far as Newcastle; and is navigated a few miles farther by keels, a peculiar description of vessels, employed to convey coal to the coal ships. Newcastle has an extensive intercourse with foreign countries; and is the grand emporium of the coal trade. As a shipping port, it is inferior only to London. The towns of North and South Shields are, however, the proper ports of the Tyne.

Tees. — The sources of this river are contiguous to those of the South Tyne. At first it flows in a south-easterly direction; but, below Darlington, it turns abruptly to the north-east, falling into the sea below Stockton, which may be considered its port. Stockton has a good deal of trade; and has recently risen to considerable eminence as a port for the shipping of coal. There are about 8 feet water on the bar at the mouth of the river at low ebb.

Wear. — The Wear rises to the north of the Tees, on the confines of Durham and Cumberland. After passing Wolsingham and Bishop's Auckland, it changes the southerly course it had hitherto pursued, turns to the north-east, and having nearly surrounded the city of Durham, flows northward to Lambton Hall; and then inclining a little to the east, falls into the sea at Sunderland.

The Wear is navigable as far as Durham, a distance of about 18 miles. It is of considerable importance in a commercial point of view, from its flowing, in the latter part of its course, through a country supplied with vast beds of excellent coal. The exports of this most useful mineral from the Wear are, in fact, little inferior to those from the Tyne. Sunderland has two grand piers, with a lighthouse 90 feet high. At high spring tides there is from 16 to 17 feet water over the bar, and at neaps, from 10 to 12 feet. This has recently become one of the principal ship-building ports. Sunderland is celebrated for the cast-iron bridge over the Wear, erected in 1796. This noble fabric consists of a single arch, 236 feet in span, elevated, in the centre, 100 feet above high-water mark.

Rivers falling into the Wash. — Of the rivers that have their embouchure in the great æstuary of the Wash, or arm of the sea between Norfolk and Lincolnshire, the most important are the Great Ouse, the Nene, the Welland, and the Witham. The Ouse rises in Northamptonshire, near Brackley, on the borders of Oxfordshire. Its course at first is east, a little inclining to the north, through Bucks; it then passes Olney and Harrold, and, after many windings, reaches Bedford, where it becomes navigable. It subsequently traverses Huntingdonshire, Cambridgeshire, and the north-west corner of Norfolk, falling into the æstuary of the Wash at King's Lynn. From Huntingdon Sluice to Denver Sluice, a distance of about 20 miles, in a direct line, the Ouse is now called the New Bedford River, from the greater part of its water flowing in the great canal or drain of that name, dug in the reign of Charles II., to facilitate the drainage of the fens. In its course, the Ouse receives the Old River Nene, from Ramsey, in Huntingdonshire; the Cam, from Cambridge; the Little Ouse, from Thetford; the Lake, from Bury St. Edmund's; the Wissey or Stoke, from Stoke Ferry; and the Nar, from Castle Acre; all of them being navigable to the places now mentioned.

The Nene, which rises in the south-west parts of Northamptonshire, flows in a north-east direction from Northampton, where it becomes navigable, past Oundle, till, at the extreme north-west point of Huntingdonshire, it turns to the east, passing Peterborough; and then inclining more and more to the north, and passing Wisbeach, it falls into the Wash by an artificial channel called the Nene Outfall.

The Welland rises on the confines of Northamptonshire and Leicestershire, near Market Harborough. After flowing in a north-east and northerly direction, by Stamford, Market Deeping, and Spalding, dividing Northamptonshire from Leicestershire, Rutlandshire, and Lincolnshire, and through the southern part of the latter, it falls into the Wash at Fossdyke Bridge. It is navigable as far as Market Deeping; and a canal has been constructed from the latter to Stamford.

The Witham has a very circuitous course. It rises on the confines of Lincolnshire and Rutlandshire, and pursues a northerly course, by Grantham, to Lincoln: it next flows east for a few miles, and then turning south, it terminates its course about 5 miles below Boston. It is navigable to Lincoln, a distance of about 38 miles; and by means of the Fossdyke Canal, originally constructed by the Romans, is joined with the Trent. Boston has more trade than any place on the Wash; but the access to its port continues, notwithstanding the improvements, to be rather intricate and difficult.

Almost all the rivers that fall into the Wash run, for a considerable part of their course, through the Great Level of the fens. And in consequence partly of the operation of natural causes, and partly of the cutting of new channels, and the making of embankments, in the view of facilitating drainage and navigation, their courses have been very much altered. This is particularly the case with the Ouse, the Nene, and the Welland.

The basin of the Wash is of considerable extent, consisting mostly of very rich and highly productive marsh land. It has, however, very few manufactures; and its ports have little trade other than that which results from the exportation of the surplus agricultural produce of the surrounding country, and the importation of the various articles required for the use of the population. Exclusive of Boston, already referred to, Wisbeach in Cambridgeshire, and King's Lynn in Norfolk, are the principal ports on the Wash.

Yare, &c.—Leaving the Wash, and proceeding southward round the Norfolk coast, the first river of any importance that is met with is the Yare, which falls into the sea a little below Yarmouth. The Yare originates in several streams rising in the country round Wymondham. A little below Norwich it is joined by the Wensum, which rises near Rainham Park, in the northern part of Norfolk. Near Yarmouth the Yare is further augmented by the Bure and Waveney, the former being navigable to Aylsham, and the latter to Bungay. The Yare and Wensum are navigable as far as Norwich; but, at present, the principal and best access to that city is by the Lowestoffe navigation. This, which commences at Lowestoffe, consists partly of artificial cuts, partly of the lake Lothing, and partly of the rivers Waveney, Yare, and Wensum. It is about 30 miles in length; and is calculated to admit vessels drawing 10 feet water.

Of the remaining English rivers a few only are of sufficient importance to require any notice in a work of this sort. The Rother falls into the English Channel at Rye. The Sussex Ouse, which falls into the sea at Newhaven Harbour, has been made navigable as far as Paxhill. The Arun, which falls into the sea at Arundel, is an inconsiderable river, but it is joined by means of canals with the Wye near Godalming. The Hampshire Avon falls into the sea at Christchurch. It rises near Devizes, on the north side of Salisbury Plain. At Salisbury it is joined by the Wiley and the Bourne; and is navigable from Trafalgar House to its mouth. The Stour, also, has its embouchure at Christchurch. It flows from the northern extremity of Dorsetshire; and is navigable as far as Sturminster New-town. The Ex has its sources in Exmoor, in the western extremity of Somersetshire; and flowing southward by Tiverton, to which it is navigable, and Exeter, it expands into an æstuary at Topsham, about 8 miles from the sea. As the mouth of the river had been much impeded by various obstructions, a canal, which has recently been enlarged and improved, has been cut from Exeter to a point about 2 miles below Topsham, capable of admitting ships drawing 14 feet water. The bar at the entrance of the æstuary of the Ex, opposite to Exmouth, is dangerous; and should not be crossed without a pilot. The Tamar rises on the confines of Devonshire and Cornwall, near the northern extremity of the latter. It flows in a southerly direction, inclining to the east, by Launceston, to which it is navigable, Saltash, and Devonport, till it falls into Plymouth Sound.

None of the Welsh rivers, with the exception of those already mentioned, seem to require any notice.

The Eden, the most important river in the north-west of England, rises on the borders of Westmoreland and Yorkshire, near Pendragon Castle, close to the sources of the Swale, in one of the highest parts of the great central ridge of mountains. It pursues a north-wester is course, and falls into the Solway Frith below Carlisle, to which itnal navigable. But, the navigation being tedious and difficult, a caanl has been cut from Carlisle to Bowness Point, a distance of 11¼ miles, admitting vessels of from 60 to 80 tons burthen.

The Ribble and the Lune, or Loyne, have also their sources in the central range of mountains, and, flowing in a south-westerly direction, fall into the Irish Sea, the former a little below Preston, and the latter a little below Lancaster, to which they are navigable by small vessels

Lakes.—The lakes of England are mostly in the mountainous parts of Cumberland, Westmoreland, and Lancaster. They are rather numerous; but of no great magnitude or importance, being indebted for their great celebrity entirely to the picturesque beauty, variety, and richness of their scenery. They are usually found in the glens, or hollows between the mountains; and are generally long, narrow, deep, and limpid. The principal are Windermere, partly in Westmoreland and partly in Lancashire; Ulleswater, partly in Westmoreland and partly in Cumberland; Bassenthwaite-water, Derwent-water, Ennerdale-water, &c. in the latter, and Coniston-water in Lancashire. Windermere, the most extensive of the whole, is about 10½ miles long, and where broadest is more than a mile across. Its area, including thirteen or fourteen small islands, or holms, is estimated at about 2,574 acres. In some places it is 35 fathoms deep. The largest island contains about 30 acres. Ulleswater, the next largest lake, is about 9 miles long, its utmost breadth being about a mile. It has a zigzag shape, and contains three small islands.

Besides those in the northern counties, the only considerable lakes in England are the shallow lakes, or meres, as they are provincially termed, in the fenny parts of Huntingdonshire, Norfolk, &c. Of these, Whittlesea Mere and Ramsey Mere in Huntingdonshire are the most considerable. The former contains about 1,570 acres.

There are several small lakes in Wales.—Bala Lake, the largest, has been already noticed. It is about four miles in length, and, in some places, nearly one in breadth.

Sect. 6.—*Sea-Coasts and Sea-Ports.*

The sea coast of England and Wales is of great extent. It extends, measured in direct lines, from one headland to another, about 1,200 miles; but including its principal windings, its length may be taken at about 2,000 miles.* It has some of the finest harbours and bays in the world; but these are more numerous on the southern and western than on the eastern coast. With the exception, indeed, of London and Harwich, there is no really good harbour between the South Foreland and Berwick-on-Tweed, nor, in fact, till we reach Cromarty Frith in Scotland.

In describing the sea coast of England and Wales, we shall set out from the Thames, and proceed northward. The mouth of the river is bounded on the north by the Naze, a hooked promontory in Essex, to the south of Harwich, and on the south by the North Foreland, in Kent; or perhaps it may be fixed at the Nore, between Shoeburyness in Essex, and Sheerness in Kent. The coast of the former stretches from the point now mentioned north-east to Harwich; the intervening space being deeply indented by the bays or æstuaries formed by the Crouch, Blackwater, Colne, and Stour. It is thoughout low, flat, and marshy; and is skirted by numerous sand-banks. Harwich, at the mouth of the æstuary of the Stour, is one of the best ports on the east coast of England. As already stated, the access to it is a good deal encumbered with rocks; but ships properly navigated need apprehend no danger: there is water sufficient to float the largest men-of-war, and the harbour is at once capacious, safe, and commodious.

The sea has in the course of ages effected very great changes on the Essex coast. It is now rapidly encroaching on the peninsula on which Harwich is built. The battery to protect the town had, when it was constructed 25 years ago, a considerable space of ground between it and the sea; but this and part of the fortifications have been already swept away. Since 1807 a field, belonging to the living of Harwich, has shared the same fate. — (*Lyell's Geology*, 3d edition, vol. i. p. 40.)

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* See the Table in the Geography of Great Britain, p. 4.

The coast of Suffolk runs northerly, with a small inclination to the east, in a slightly waving line, from Landguard Fort opposite Harwich to Great Yarmouth. The first promontory we come to is Orfordness, a low beach running out into the sea. The town of Orford, formerly a sea-port, is now at some distance inland; but from Orfordness to Lowestoffe the sea has committed great ravages on the Suffolk coast. Dunwich, now an inconsiderable place, with not more than 200 inhabitants, was anciently an important sea-port, having an extensive trade, and a large population; but its port and its ancient site have been totally destroyed. The encroachment of the sea began previously to the Conquest. In the reign of Edward III. an inundation swallowed up more than 400 substantial houses. The last great irruption of the sea was in 1740; but it has continued progressively to make encroachments, and at present there remain only the ruins of one of its many churches. The ravages of the sea at Aldborough have not been much less destructive. Latterly, however, they have been checked by the formation of a sand-bank a little off shore. — (*Campbell's Survey*, vol. i. p. 277.; *Lyell's Geology*, 3d ed. vol. i. p. 403.)

The sea opposite to Southwold, between Covehithe on the north, and Thorpeness on the south, is called Sole Bay. It was a frequent station of the English fleet during the Dutch wars in the reign of Charles II.; and here, in 1672, was fought the well-contested action between the English and French fleets, under the Duke of York and Count D'Estrées, and the Dutch fleet under De Ruyter.

At Lowestoffe and Yarmouth the land has gained on the sea. The change that has taken place in the vicinity of the latter has been most extraordinary. In the time of the Saxons a spacious æstuary extended as far as Norwich; which city is represented, even in the 13th and 14th centuries, as situated on "an arm of the sea." The sands whereon Yarmouth is built became firm and habitable ground in the early part of the 11th century; from which time a line of dunes has gradually increased in height and breadth, stretching across the whole entrance of the ancient æstuary, and obstructing the ingress of the tides so completely, that they are only admitted by the narrow passage which the river keeps open, and which has gradually shifted several miles to the south. Ordinary tides at the river's mouth only rise at present 3 or 4 feet, and springs 8 or 9 feet.

"By the exclusion of the sea thousands of acres in the interior have become cultivated land; and, exclusive of smaller pools, upwards of sixty freshwater lakes have been formed, varying in depth from 15 to 30 feet, and in extent trom 100 to 1,200 acres. The Yare and other rivers frequently communicate with these lakes; and thus they are liable to be filled up gradually with lacustrine and fluviatile deposits, and to be converted into land covered with forests." — (*Lyell's Geology*, 3d ed. vol. i. p. 398.)

From Yarmouth the Norfolk coast stretches north to Wintertoness, then north-west to Cromer, from the latter nearly west to Gore Point and Hunstanton, and thence nearly south to King's Lynn. It is for the most part fenced by sand-banks, that usually lie parallel to the shore; of these the most celebrated lie off Yarmouth, forming the outward barrier of the Roads.

The coast of Norfolk consists principally of cliffs, partly consisting of chalk, and partly of alternate strata of clay, gravel, loam, and sand. These are gradually undermined by the sea, which is every where making inroads on the land. The site of the ancient Cromer is now a part of the German Ocean; and the sea still threatens to dislodge the inhabitants from the more inland situation to which they have retreated. In the winter of 1825, some cliffs, nearly 250 feet high, contiguous to Cromer lighthouse, were precipitated into the sea, their fragments covering 12 acres! The ancient villages of Shepden, Wimpwill, and Eccles have been engulfed; and in the harbour of Sheringham there is now water sufficient to float a frigate, where, half a century ago, there stood a cliff 50 feet high, with houses upon it! —(*Lyell's Geology*, vol. i. p. 396.)

At Holkham, Wells, and other places of the Norfolk coast, the shores are low, terminating in little hillocks of sand. The latter being held together by the *arundo arenaria* or brent, oppose an effectual barrier to the encroachments of the sea. Hunstanton Cliff, at the entrance to the Wash, is naturally a prominent object, and is rendered still more conspicuous from its being crowned with a lighthouse: it is 80 feet high, and consists of chalk and hard red sandstone, resting on a base of iron-coloured puddingstone.—(*Introd. to Pennant's Arctic Zoology*, p. 8.)

Lincolnshire is separated from Norfolk by the Wash, a great arm of the sea, extending south-west from Hunstanton Cliff round by King's Lynn, the Nene Outfall, and Fossdyke, to Gibraltar Point, near Waynfleet. It is encircled on all sides, except where it opens to the ocean, by low, marshy land, forming part of the Great Level of the fens. It is mostly filled up with immense sand-banks, the summits of which are dry at low water. The channels by which it is navigated are intricate, and require the aid of experienced pilots. An immense extent of land has been gained from the sea round its banks; and the process of "silting up" is continually going forward.

From Gibraltar Point the coast of Lincolnshire sweeps round in a continuous unindented line, without ports, to the Humber. It is so low as to be visible from the sea only at a small distance; so that churches, and not hills, are its distinguishing landmarks. This coast has been the theatre of great changes. Waynfleet, once a noted town, is at present an inconsiderable creek. Skegness, once a large walled town, with a good harbour, is now an inconsiderable place, a mile from the sea. The port of Grimsby, which in the reign of Edward III. furnished 11 ships for the siege of Calais, was recently almost choked up, and is now entirely artificial. In other parts, however, the sea has gained on the land; and the remains of a forest are said to be still visible under the waves.

Crossing the æstuary of the Humber (see section on Rivers), we meet with the Spurn Head, forming the south-eastern limit of the Yorkshire coast. This is a long, low, narrow, hooked promontory: its extremity, on which two lighthouses are erected, being a beach mixed with sand-hills thrown up by the sea.

From this point the coast, which bends north-west to Hornsea, is composed principally of lofty cliffs of brown clay, perpetually preyed on by the sea; which, Mr. Pennant states, "devours whole acres at a time." A street, in the village of Hornsea has been swallowed up; and of Hyde, a neighbouring village, the tradition only is left.—(*Arctic Zoology*, *Introd.* p. 13.)

From Hornsea the coast inclines first gently to the west, and then round by the east, till it terminates in Flamborough Head. It is mostly low. Within the elbow, on the south side of the Head, is Bridlington Bay. On the north and west, it is protected by the Head and the adjacent coast, while the anchorage in-shore is defended from the easterly and southerly gales by the sand-bank called the Smithie. The holding-ground between the sand and the shore is good, and there are from 5 to 7 fathoms water. The Smithie is the only sand-bank on the coast, from Spurn Head to Flamborough Head.

This last-mentioned promontory is at once the most striking and the most celebrated on the east coast of England. Its high, white, perpendicular limestone cliffs advance a considerable way into the ocean, and render it a most conspicuous object. Many of the rocks of which it is composed are insulated, of a pyramidal form, and soar to a great height. Most of them have solid bases; but others are pierced through and arched. On the north side are vast caverns, leading into the body of the Head, the retreat of immense numbers of sea-fowl and wild pigeons. A lighthouse, having the lantern elevated 214 feet above the level of the sea, and which is distinguishable in fair weather at a great distance, was erected on this promontory in 1806.

This Head is further remarkable from its being the commencement of the hard or rocky coasts of the east side of Great Britain, which continue, as Mr. Pennant has remarked, with the intervention of a few sandy bays and low tracts, to its northern extremity.

North-west from Flamborough head, distant about 16½ miles, a round rocky promontory projects into the sea, by which it is surrounded on all sides except on the west. On the summit of this promontory is built the castle, and on its side stands the town of Scarborough. The latter has a pier harbour, vessels lying aground at low water. The shore is here remarkably bold; the height and appearance of the cliffs resemble those near Dover. Between Scarborough and Whitby, lies Robin Hood's Bay; having deep water, but exposed to the easterly gales. The coast thence to Whitby is rocky and dangerous. Whitby is situated at the mouth of the Esk. It has a fine pier; but its harbour, though justly considered the best in this part of the country, ebbs almost dry. There is a lighthouse on the pier.

From Whitby to the æstuary of the Tees, the boundary between Yorkshire and Durham, the coast bends west-north-west. It is bold and rude, and destitute of any tolerable harbour; but it is indented with many bays, and varied with little fishing villages, built on the projecting ledges of the cliffs.

Hartlepool, in Durham, marks the northern extremity of the mouth of the Tees. It is seated on a promontory, almost surrounded by the sea. The harbour is small, but has recently been much improved by the erection of a pier, floodgates, &c., affording secure shelter for the smaller class of vessels. Hence, for some distance, the coast is flat; but, as it approaches Sunderland, it becomes rocky, and is broken into deep caverns. Sunderland stands on the south side of the river Wear, and so near the ocean, as at high water to appear a sort of peninsula. This port began first to rise into eminence, by the exportation of coal, about 1620. Latterly, it has been very much improved; two piers, and a lighthouse 90 feet high, having been constructed. At springs, there is from 15 to 17 feet water over the bar, and at neaps, from 10 to 12 feet. The channel is close by the north pier head. Beyond Sunderland, the coast is bleak and dreary, to the point where the opposite towns of North and South Shields mark the embouchure of the Tyne. Within the river, and near the town of North Shields, are two lighthouses, which lead over the bar. The bold ruin of Tynemouth Castle is the first object that presents itself on the Northumberland coast. About 12 miles north from this is Newbiggin Point; between which and Tynemouth are the small harbours of Hartley, Blythe, and Seaton-Delaval, all of them dry at low water. From this point the coast presents nothing remarkable, except a small island at the mouth of the Coquet, till we reach Bamborough Castle, situated on a promontory, once a place of great strength. Nearly opposite to it lies the group of rocky islets, called the Farn Isles, on the largest of which are two lighthouses. Holy Island lies about 4 or 5 miles north of Bamborough Castle. The coast of Northumberland, from the mouth of the Tyne to Bamborough Castle, is mostly low cliffs. From Bamborough to the mouth of the Tweed a sandy shore extends.

We have now briefly to notice the western coast of England, beginning with that of Cumberland. The coast of this county, and of the detached part of Lancashire called Furness, forms almost a semicircle, beginning at the mouth of the Eden, and terminating at the Isle of Walney. Toward the Solway Frith, it is marshy, indenting the country afterwards with the Bay of Kilbride. Workington, near the mouth of the Derwent, is the first place of consequence that presents itself. It has about 14 feet water at springs, and 8 at neaps. A little to the south of this is Whitehaven, situated on a small bay, surrounded by naked hills. It is supposed to have received its name from the white cliffs which lie on one side of its port; but its entire consequence is derived from its coal mines, excavated to a great extent under the sea. The harbour is divided into several basins, having from 16 to 18 feet water at springs, and from 9 to 10 at neaps. About 3 miles west-south-west from it is the lofty promontory of St. Bees' Head, surmounted by a lighthouse, and noted for the resort of sea-fowl.

The coast of Lancaster is very much indented by the Irish Sea. Dr. Campbell, in describing it, divides it into three peninsulas. Of these the first is comprehended between the river Duddon, which separates Lancashire from Cumberland, and the Kent, which separates it from Westmoreland. The second lies between the Kent and the Ribble, and the third between the Ribble and the Mersey, the boundary between Lancashire and Cheshire. The first of these, called Furness Fells, already adverted to, presents a line of coast of nearly 30 miles. The long and narrow Isle of Walney forms a vast natural breakwater, that protects this part of the Lancashire coast from the waves of the Irish Sea. Within the south end of Walney Island, on which there is a lighthouse, is the harbour or roadstead of *Pile-a-foudre*, protected on the east by the islands of Foula and Ro, to the westward of which vessels may ride in from 5 to 7 fathoms. This is a place of considerable importance, as respects the commerce of Liverpool, being the only safe resort for vessels in this quarter during strong westerly gales. — (*Norie's Sailing Directions for St. George's Channel, &c.* p. 47.) Ulverston, the port of the Furness district, is situated on the west side of a shallow arm of the sea, into which flow the Crake, Leven, and other streams. This arm, as well as the broad æstuary between Humphry Head and Carnforth, is fordable, though not without danger, at low water. Morecambe Bay forms a spacious gulf, between Furness and Walney Island on the one hand, and the Lancaster coast on the other.

The second part of the sea-coast between Westmoreland and the Ribble is more extensive, as well as flatter, than the former division. To the south of the Lune is the marshy tract along the Wyre, having Rossal Point at its north-west angle. From this point, the coast runs almost due south, till it is indented by the æstuary of the Ribble.

In the last division, between the Ribble and the Mersey, the Lancashire coast takes a sort of circular form, being most advanced at Formby Point, about 11 miles N.N.W. of Liverpool. This great emporium lies on the north-east side of the æstuary of the Mersey, between 2 and 3 miles from its mouth. The entrance to it is obstructed by numerous sand-banks, the passages through which are intricate and difficult; and should not be attempted by those not familiar with the port without the aid of a pilot.

The coast of Cheshire is formed entirely of the broad rhomboidal peninsula lying between the Mersey and the Dee, and presents no feature worthy of notice.

The coast of North Wales begins at the bottom of the æstuary of the Dee; but the first object worth notice is the Point of Air. This promontory bounds the embouchure of the Dee, on its western side, and is the most northerly land in Flintshire. It is surmounted by a lighthouse. From this point, the coast takes a concave circular sweep, till it terminates in the Great Ormes Head. This is a vast limestone rock, connected with the mainland by a low marshy neck; and has, no doubt, been at one time an island. Towards the sea the cliffs, which are very abrupt, are hollowed, by the action of the waves, into various inaccessible caverns, affording a secure retreat for multitudes of gulls, cormorants, ravens, rock pigeons, &c. A telegraph is erected on the summit of the head. (*Aikin's Tour in North Wales*, p. 165.)

South of the Great Ormes Head is the embouchure of the river Conway. The harbour at the town is fit for small vessels; but ships may lie, in the æstuary, in from 3 to 4 fathoms. From Conway, the coast stretches south-west to Bangor. The road between them skirts the mountain of Penmaenmaur, the last of the Snowdon range, being cut out of the rock, about 200 feet above the level of the sea, which, at high water, dashes against the foot of the mountain, almost directly below. Bangor is situated at the entrance of the Menai Strait, separating the Island of Anglesea from Caernarvonshire. This strait runs north-east and south-west, about 14 miles, varying in width from about 2 miles to about 200 yards. Parliament having liberally contributed a sum of money to assist in improving its navigation, the dangerous rocks, by which it was formerly encumbered, have been removed, so that vessels of moderate burden are able to pass without difficulty through the strait, when it would not be possible for them to double Holyhead. But the Menai Strait is now principally celebrated for the magnificent hanging bridge by which it has been recently crossed. Holyhead being the nearest port to Ireland, and the most convenient place at which to ship and receive the Dublin mails, it became of great public importance that the access to it should be rendered as safe and expeditious as possible. The usual ferry across the strait was in the vicinity of Bangor; and this being frequently attended with both danger and delay, it was resolved to erect, nearly at the same place, a chain bridge, elevated sufficiently above the water to allow ships to pass freely underneath. This great undertaking was begun in 1819, and completed in 1825. There are seven stone arches, each of 52½ feet span; and the length of the catenary or chain part is 579 feet. The bridge cost in all 211,791*l.* Its elegance and solidity reflect great credit on the engineer, Mr. Telford; but it is to the parliamentary Commissioners, or, rather, their chairman, Sir Henry Parnell, that the public is mainly indebted for this signal improvement.

Holyhead stands on a peninsula on the west coast of Anglesea. Being the station of the post-office packets for the mails between London and Dublin, great efforts have been made to improve its harbour. It used to be always dry at low water, so as to be unsuitable for vessels that could not lie on the mud. To obviate this defect, a pier has been projected about 200 fathoms into the sea, having 12 feet water at its head at low springs. The pier has a lighthouse at its extremity. The peninsula of Holyhead is terminated by a high rocky promontory, called the South Stack, surmounted by a lighthouse elevated 201 feet above the level of the sea. The Skerries, a small island to the north of Holyhead, is also marked by a lighthouse. (*Norie's Sailing Directions for St. George's Channel, &c.* p. 32.)

The coast of Caernarvonshire, southward from Menai Straits, is formed by the peninsulated hundred of Lleyn. At its south-western extremity is the small island of Bardsey, furnished with a lighthouse.

The south point of Caernarvonshire forms the north-west horn of the great bay of Cardigan, one of the most considerable indentations made by the sea on the western shore of the island: it is pretty equally distributed between North and South Wales. The coast of Merionethshire, fronting this bay, is wild and mountainous: the only port in it is Barmouth, on the north side of a little arm of the sea, into which several rivulets discharge themselves. It is fit only for small vessels, drawing 9 or 10 feet water. Below Aberystwith, which, also, is only fit for small vessels, the coast of Cardiganshire stretches in a south-westerly direction, till it joins that of Pembrokeshire, a promontory to the north of St. David's, in the latter, forming the southern horn of the Bay of Cardigan. Cardiganshire has a coast of nearly 40 miles; and has suffered a good deal from the encroachment of the waves.

The coast of Pembrokeshire is in general hilly, with steep or perpendicular cliffs. It commences at the mouth of the Teify, on the north side of which is the town of Cardigan, accessible only to vessels not drawing more than 10 feet water. But in Cardigan Roads ships may lie, in moderate weather, almost anywhere without the bar, about 2 cables' length from shore. Its most westerly point is the noted promontory called St. David's Head, off which lies Ramsey Island, with a group of rocks, called the Bishop and his Clerks, frequented, in the breeding season, by vast numbers of sea-fowl. To the south of this headland is St. Bride's Bay; and beyond some islands, which lie on its southern side, is the entrance to Milford Haven.

This is one of the most capacious and safest asylums for shipping in the British dominions. It deeply indents the southern part of the county of Pembroke, and branches out into many bays, creeks, and roads. The water is deep; and, being completely landlocked, and the anchorage ground of the very best description, ships ride within the haven as safely as if they were in dock. At springs the rise of the tides is from 28 to 30 feet, affording unusual facilities for the repair of ships, enabling them to get to sea with comparatively little difficulty, and to sail in, even though the wind should be contrary. It may be entered without a pilot as well by night as by day. A dockyard has been constructed on the north side of the haven, at Milford; but, the advantage of having the rendezvous for the fleets in situations better adapted for watching the coasts of France has prevented Milford from attaining that importance, as a naval depôt, which her admirable haven might seem to ensure; while the barrenness of the surrounding country, and the want of all internal communication with any considerable manufacturing districts, will, most probably, prevent any of the places on the haven from becoming of much consequence in a commercial point of view. St. Anne's Point, forming the north-western extremity of the entrance to the haven, is about 145 feet high; and is surmounted by two lighthouses, one 15, and one 45 feet in height. The entrance is about 1½ mile wide.

The coast of Wales, to the south of Milford Haven, continues rocky; it is also full of caves and remarkable apertures, as far as the entrance to the Bay of Caermarthen. The western horn of this bay is formed by the rock on which Tenby is situated; the opposite horn, by the Worms Head, the western extremity of the peninsula of Gower, in Glamorganshire. On the south side of this peninsula lies the Bay of Oxwich; and, to the east, the Bay of Swansea. The coast then stretches south-easterly to Aberthaw, where it turns to the north-east, bounding the west side of the Bristol Channel.

The shore of Monmouthshire inclines chiefly to the south, verging at last towards the east: at first it is marshy and low, but as we approach the Wye it becomes rocky and lofty. The coast of Somerset, opposite the Bristol Channel, forms an extensive semicircular bay; stretching, if the indented shore line be taken into account, nearly 60 miles: at the outset, it is low, and bordered by marshes, and it continues pretty level till it reaches the Bay of Minehead. Thereafter, the coast of Somerset, together with that of Devon, which soon joins it, may be called mountainous, having many dark cliffs and rocky hollows. The shore of the latter county stretches at first due west, and then turning south, the land is very irregularly indented, so as to form Barnstaple Bay: it turns again westward, and afterwards, advancing north, forms the bay called Porlidge Mouth; at the extremity of which lies Hartland Point.

Soon after passing Hartland Point, the Cornish shore commences. The first place we meet with on it is Beedshaven. A long range of broken coast succeeds, stretching in a south-westerly direction to St. Ives, situate on the west side of a considerable bay. It has a pier, where small vessels lie aground at low water. Large ships may anchor in the bay, in from 6 to 7 fathoms; but, being quite exposed to the northerly gales, which throw in a heavy sea, it is not much frequented. From St. Ives, the coast bends in a circular south-westerly direction to Cape Cornwall, and thence southerly to the Land's End. This celebrated headland, the most westerly land in England, is in lat. 50° 4′ 8″ N., long. 5° 41′ 31″ W. The cliffs forming its extremity are granite, and rise about 60 feet above the level of the sea. They assume, in some places, the appearance of shafts, and are as regular as if they had been cut by the chisel. Cape Cornwall is elevated about 229 feet above the level of the sea. The bay, between the latter and the Land's End, is called Whitsand Bay, from the peculiar whiteness of its sand. About a mile from the Land's End are the rocks called the Longships, on the largest of which is a lighthouse. The Scilly Islands lie in a cluster, about 9 leagues west by south from the Land's End, and are distinctly visible from it. Sir Cloudesley Shovel was wrecked on them in 1705. A lighthouse has been erected on St. Agnes, one of the largest of the group. After doubling the Land's End, the Cornish shore advances southward, and then turning to the north, bounds the west side of Mount's Bay, its east side being formed by the coast, stretching south-easterly to the Lizard Point.

Penzance, the most westerly market town in England, lies on the north-west shore of this bay. It has a pier above 600 feet in length, with a lighthouse at its extremity; within the pier there are 22 feet water at springs, and 17 at neaps.* Penzance is one of the principal seats of the pilchard fishery; the other great seats being St. Ives and Mevagissey. But the most remarkable object in Mount's Bay, and that from which, indeed, it takes its name, is St. Michael's Mount. This is a rock of a conical form, lying opposite to Marazion, on the north-east side of the bay. Its base is circular, being nearly a mile in extent; it gradually diminishes from the base to the summit, which is crowned with a chapel, its tower being about 250 feet above low-water mark. On its eastern side is a small fishing village, with a pier, having about as much water as at Penzance. The appearance of the Mount is most striking. It was long regarded as a place of peculiar sanctity, and its chapel was annually resorted to by crowds of pilgrims.

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* This is Dr. Paris's statement.—(*Guide to Mount's Bay*, &c. 2d ed. p. 24.) He notices the different statement given in the Sailing Directions for the Channel, where the depth of water within the pier is said to be only 13 feet at springs.

Dr. Paris affirms that the sea is encroaching on most parts of the southern coast of Cornwall. He mentions, that the grandfather of the present vicar of Madron received tithes from land under the cliff of Penzance. It appears certain that at some distant period a very considerable extent of land has been submerged in Mount's Bay.—(*Paris's Guide, &c.* p. 15.)

The eastern shore of Mount's Bay terminates, as already stated, in the high bold headland called the Lizard Point. This, which is the most southerly promontory in Great Britain, is famous in navigation; for it is from it that ships take their departure from the English Channel, and it is, also, the best place for a land-fall when homeward-bound. It is surmounted by two lighthouses, at a short distance from each other: the one 221, and the other 225 feet above the level of the sea. The highest lighthouse is in lat. 49° 57′ 41″ N., long. 5° 11′ 5″ W. Some steep rocks, called the Stags, lie to the southward off the Lizard.

From the Lizard the coast bends in a north-north-east direction to Pendennis Point, on the western side of the entrance to Falmouth harbour; on its eastern side is St. Anthony's Head, the distance between them being exactly a mile. This is an excellent harbour. It runs north about 5½ miles. Falmouth is situated on a creek on its western side; and St. Mawes on its eastern side, immediately within St. Anthony's Head. It has good anchorage ground for the largest ships; and they may also anchor without the harbour, having it in their power to retreat into it in the event of the wind coming to blow from the southward. This gives a great facility to ships getting to sea.

From Falmouth harbour the coast runs N.N.E. in a broken line to Fowey, at the mouth of the river of that name. The entrance to the harbour is only about a cable's length in breadth; but it is free from danger; and within there is at all times, 3 fathoms water.

From Fowey to the Rame-head the coast presents nothing remarkable. This headland forms the western boundary of Plymouth Sound, which opens the moment it is passed.

The harbour of Plymouth is double. The æstuary of the Plym, on which Plymouth is built, forms the Catwater, a convenient harbour for merchantmen. Devonport, where the dockyards are situated, is built on the west side of the tongue of land formed by the confluence of the Plym and Tamar, at the mouth of the latter. The æstuary of the Tamar expands into the road or harbour of Hamoaze, which is almost completely land-locked, with secure anchoring-ground, and depth of water sufficient to float the largest ships close to the Quays. The dockyard is large, commodious, and furnished with every convenience for building and refitting ships. The two harbours open into Plymouth Sound and Cawsand Bay; and it is in the Sound that ships refitted in the dockyards, or in the Hamoaze, as well as those employed during war in the blockade of Brest, usually assemble before going to sea. Owing, however, to the heavy swell that is thrown in from the south, Plymouth Sound was often a very unsafe place for anchoring; and to obviate this inconvenience, a stupendous breakwater, or mole, about 1700 yards in length, has been formed in the middle of the Sound, stretching in a slightly hooked line between the head of Cawsand Bay on the one side, and Bovisand Bay on the other. The top of the mole is above the level of the highest tides; the under part being formed of vast stones sunk in the sea. This great national undertaking cost a very large sum; but the important object in view in its construction has been completely attained. The part of the Sound within the breakwater has been rendered one of the very best roadsteads in the world; it is accessible on either side, and is sufficiently capacious to admit the largest fleets, which ride, under cover of this immense bulwark, in the stormiest weather, in the most perfect safety. The entrance to the Sound is defended by the forts on Drake's Island, the citadel opposite, and several adjacent batteries.

Nearly opposite to Plymouth Sound, about 8½ miles from the Rame Head, is the famous Eddystone lighthouse. It stands on one of a cluster of irregular rocks, part of which is uncovered at low water. Being much exposed to heavy swells from the Bay of Biscay and the Atlantic, the waves frequently break over them with tremendous fury. In consequence of the many fatal accidents occasioned by ships running against these rocks, a lighthouse was erected on one of them in 1696: after standing many violent storms, it was overthrown in the dreadful tempest on the 27th of November, 1703. A second lighthouse, erected in 1708, was burnt down in 1755. The present edifice, built by the celebrated engineer, Smeaton, and finished in 1759, is universally admired for its solidity and the skill displayed in its construction. It bids fair to last for ages.

Leaving Plymouth, the shore stretches in an east-north-east direction till the Bolt Head, elevated 430 feet above the level of the sea, and the Prawle Head are passed. Between these promontories is Salcomb Bay; on the bar at the entrance to which there is not more than from 4 to 6 feet water at ebb tide. At a little distance E.N.E. from Prawle Head is the Start Point, a noted promontory. From it the coast stretches N.N.E. to Exmouth. The first place of consequence met with in this range is Dartmouth, which has an excellent harbour sufficient to accommodate 300 sail in from 7 to 15 fathoms. A little to the north of Dartmouth is Torbay, bounded on the south by Berry Point, and on the north by Torquay. Its form is semicircular, being about 3½ miles wide at the entrance. On both sides its winding shores are skreened with ramparts of rock; between which, in the centre, the ground forms a vale declining gently to the water's edge. The bay fronts the south-east. Ships anchor in it in 6, 7, 8, and 9 fathoms. The ground is strong clay, and holds remarkably well. This spacious basin has frequently afforded shelter to the fleets of England; and our great deliverer, William III., landed here on the ever-memorable 5th of November, 1688.

About 4 miles north of Torbay is the embouchure of the small river Teign, having a bar harbour frequented only by coasters. Exmouth, still farther to the north, at the embouchure of the Exe, is a place of more consequence. The harbour is, however, rather difficult of access; and at low water, neap tides, has not more than 8 feet water on the bar at its entrance.

From Exmouth, the Devonshire and Dorsetshire Coast sweeps in a long circular line inclining to the south, and terminating at the southern extremity of the Isle of Portland. The Chesil bank extends along the Dorsetshire coast from near Abbotsbury to below Chesil in the isle now mentioned, a distance of from 9 to 10 miles. This extraordinary ridge runs nearly parallel to and at a little distance from the mainland, the intermediate space being occupied by a long narrow saltwater creek, communicating with the sea at Portland Road. The ridge is, in some places, about a quarter of a mile broad; its upper part consists of rounded loose pebbles, and its lower of hard blue clay. Mr. Smeaton thinks it has been formed at a comparatively recent epoch: but it is very difficult to account satisfactorily either for its first formation or its continued existence. There is a similar and still more extensive ridge, bounding the Frische Haf, on the coast of Prussia.*

The noted and almost insulated headland, called, for that reason, the Isle of Portland, consists of a vast mass of freestone. On its southern extremity, denominated Portland Bill, two lighthouses are erected. The Race of Portland lies to the south of the Bill. It is a rippling of the waters, occasioned by the ruggedness of the ground, which impedes and breaks the course of the tide. At springs it is rather dangerous, at least for small loaded vessels. About 4 miles north from Portland Bill, on the east side of the island, is Portland Roads, where there is good anchorage ground. Immediately north of Portland Roads is Weymouth harbour, having 8 feet water on the bar at ebb tide.

After leaving Weymouth, the coast stretches east, inclining a little to the south, to St. Alban's Head, in that part of Dorsetshire called the Isle of Purbeck. Farther on is Durliston Head, Peverel Point, and the Foreland Point. Swanage Bay lies between the last two. To the north of the Foreland Point is Studland Bay and Poole Harbour. The last is a large expanse of very irregularly shaped water, and includes several islands. It is almost entirely land-locked, the entrance to it from Studland Bay not exceeding a quarter of a mile in width, and hence its name of Pool, or basin. There is a bar at its mouth, which frequently shifts; but it has seldom more than 15 feet over it, even at high water. Poole is situated on an isthmus on the north side of the bay; and vessels drawing 14 feet water come up to the quays. Wareham, situated between the rivers Pidder and Frome, at the western extremity of Poole Harbour, formerly engrossed the greater part of its trade; but it is now much decayed; the passage to it is intricate and difficult, and it is no longer accessible except by very small vessels. "It is a considerable and singular advantage to Poole Harbour that the tide ebbs and flows twice in 12 hours. It first flows regularly 6 hours, and ebbs for 1½ hour: it then flows again for 1½ hour, and ebbs during the remaining 3 hours. The second flood appears to be owing to the peculiar situation of the entrance; for, being in a bay towards the east, the tide of ebb from between the Isle of Wight and the main falls into that bay, and forces its way into that river, so as to raise the water for an hour and a half; at which period the water without the bar, by its falling below the level of that within, produces a second ebb for the space of three hours, or until low water." *

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* Maton's "Western Counties," vol. i. p. 63.; Stevenson's "Survey of Dorset," p. 49. Dr. Maton says the length of the bank is 17 miles; but this is an error.

The western coast of the Isle of Wight forms one side of that spacious bay of which the eastern coast of Dorset makes the other. The former terminates in a narrow point, fenced with projecting rocks; the most remarkable and prominent of which are, from their being detached, tapering, and sharp, called the Needles. This promontory is marked by a lighthouse 444 feet above the level of the sea.

The appearance of the rocks from the Needles to West Cowes, and of the opposite coast of Hampshire, affords pretty strong grounds for believing that the island and the mainland were once united. The channel between is, in most places, about 2 miles wide. But a little to the north of the Needles it is narrowed to less than a mile, by a remarkable, long, low, narrow tongue of land, or causeway, projecting in a south-easterly direction from the Hampshire coast towards Cleves-end Point in the Isle of Wight. Hurst Castle stands on the extremity of this tongue, and to facilitate navigation a lighthouse has been erected on each side of it. Owing to the narrowness of the passage, the tide runs through this strait with so much force that it has deepened the channel to 28 fathoms. At high water, the causeway scarcely exceeds 200 yards in breadth: it is a sterile beach, covered with loose gravel and pebbles.

Southampton water, or Trissanton Bay, is a large inlet of the sea, commencing at Calshot Castle, and stretching north-west into the interior of Hampshire, upwards of 10 miles: it is navigable to the head for vessels of considerable burthen. Its shores are beautiful and picturesque, being lined on one side by the New Forest, and on the other ornamented by the ruins of Netley Abbey.

From the mouth of Southampton Water, the coast of Hampshire stretches, in a south-easterly direction, to Monkton Fort, at the southern extremity of the western boundary of Portsmouth harbour. This noble harbour, unequalled in Great Britain, and surpassed by very few in any part of the world, has a narrow entrance, but within its width increases, and it is sufficiently capacious to contain a great part of the navy of Great Britain. There is a bar outside the

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* Purdy's "Sailing Directions for the English Channel," p. 29.; see also Maton's "Western Counties," vol. i. p. 28.

entrance; but as it has about 13 feet water over it even at the lowest spring ebbs, it can hardly be said to be any obstruction to the navigation; and within the harbour there is water sufficient to float the largest man-of-war at any time of the tide. The anchoring-ground is excellent; and it is free from sunken rocks, or any similar impediments. The east side of the harbour is formed by the Island of Portsea; on the south-western extremity of which stands the town of Portsmouth, and its large and important suburb Portsea. Here are commodious docks and other establishments, constructed upon a very large scale, for the building, accommodation, and outfit of ships. The town of Gosport stands on the opposite or western side of the harbour. In its vicinity is Haslar Hospital, a very large and convenient building for the reception of sick and wounded seamen. The fortifications that protect this great naval depôt are superior, both as respects strength and extent, to any other in the kingdom. "Thus," to use the words of Dr. Campbell, "it appears that Portsmouth derives from nature all the prerogatives the most fertile wits and most intelligent judges could devise or desire; and that these have been well seconded by art, without consideration of expense, which, in national improvements, is little to be regarded. Add to all these the striking excellence of its situation, which is such as if Providence had expressly determined it for that use to which we see it applied, the bridling the power of France, and, if I may so speak, the peculiar residence of Neptune." — (*Survey of Great Britain*, vol. i. p. 370.)

Portsmouth harbour has the additional and important advantage of opening into the celebrated road of Spithead, lying between the Hampshire coast and the Isle of Wight. It derives its name from a sand-bank called the Spit, extending about three miles in a south-east direction from the narrow neck or tongue of land on which Gosport is built. A ship of war is always moored at the head of this bank; and the roadstead is marked by buoys, placed at regular intervals. From its safety and capaciousness, it has been called by sailors "*the king's bedchamber.*" It is protected from all gales, blowing from the west round to the south-east, by the Isle of Wight; and from those blowing from the opposite quarters, by the highlands of Hampshire.

There is good anchorage ground in Cowes Roads, on the north coast of the Isle of Wight, opposite Southampton Water. There is also good anchorage in St. Helen's Road, on the east coast of the island; but ships lying there are exposed to the easterly and south-easterly gales.

Between Portsea Island and the coast of Sussex is a large basin, having within it the islands of Hayling and Thorney, with others of inferior dimensions. There are two entrances to this basin; the first of which is called Langstone, and the second Chichester Harbour. They are both encumbered by sand-banks, and can only be approached by small vessels.

The coast here is extremely low, and continues so as it runs south-easterly, till it terminates in the promontory called Selsea Bill. Opposite to this headland are some dangerous sand-banks, called the

Owers. As a guide to ships, a light-vessel is moored at their eastern extremity, about 6 miles south-east from Selsea Bill.

From the latter point, the coast sweeps in a lengthened curve to Beachy Head. After passing the Bill and the little river Avon, we meet with Worthing, a fashionable watering-place, and a little farther east is Shoreham. Its harbour has recently been a good deal improved; but at ebb tide it has not more than 3 feet water. About 4 miles from Shoreham is Brighton; and about 5 miles more to the eastward is Newhaven. This is a pier harbour; and is reckoned the best small harbour in the Channel, between the Downs and the Isle of Wight. At low ebb spring tides, the depth of water between the piers is only 2 feet; but at high-water springs there are from 20 to 22 feet, and at high-water neaps from 13 to 14 feet.

Along all this coast, the South Downs form a near background; till, at length, advancing close to the shore, they terminate in the conspicuous bold promontory of Beachy Head, 564 feet in height. It is formed of chalky white cliffs, that project perpendicularly over the beach, whence it derives its name. A lighthouse of the first class was erected, in 1828, on the summit of the second cliff, to the west of the Head, 285 feet above the level of the sea; and caverns have been cut in the cliffs, between the Head and Cuckmore Haven, in the view of affording a place of refuge to such mariners as may be wrecked on this dangerous coast.

Beyond Beachy Head the coast turns to the north-east, and, near Pevensey, is low, sandy, and marshy: it continues of this description till it reaches Hastings, the port of which occupies a hollow space between two cliffs. William the Conqueror is believed to have landed here, in the latter part of September, 1066. At the eastern extremity of the county of Sussex, there is a capacious bay, or rather æstuary, on which were anciently two good ports, Rye and Winchelsea. The latter is now entirely choked up; and, notwithstanding the improvements effected at the former, it is suitable only for small vessels.

The coast of Kent adjoining Sussex, runs out into the low beachy point of Dengeness, on which a lighthouse is erected. From this point the coast, which is low and marshy, turns north and north-east by Dymechurch and Hythe, till we reach Sandgate, where the chalky cliffs again make their appearance, and continue to the Downs. In one of the hollows of the ridge is the town of Folkestone, having a harbour for fishing vessels. Leaving this, we pass the cliffs of Dover; but, owing to the loftiest having been undermined by the sea, and thrown down, Shakspeare's magnificent description is not very applicable to those that still remain. Dover harbour is not worthy of its ancient celebrity, being deficient in water, and not very accessible. A little to the north-east of Dover is the noted headland, called the South Foreland. The shore stretches thence first north, and then north-westerly, leaving a large sandy area, which appears to have been deserted by the water. This flat tract is terminated to the north by the high grounds of the Isle of Thanet; the most easterly point of which is called the North Foreland. Between these headlands, and opposite to Deal, is the much frequented roadstead called the Downs. It extends about 6 miles north and south; being protected from the easterly gales by the Goodwin sands, distant 4 miles from Deal, and stretching north-east and south-west about 10 miles. These sands are supposed by some to have once made part of the Kentish land, and to have been submerged about the end of the reign of William Rufus, or the beginning of that of Henry I. They are very dangerous; vessels riding in the Downs being sometimes driven upon them, and, generally, wrecked; occasionally through the ignorance and carelessness of pilots, but more frequently from the violence of the south-east and north-east winds. They are divided into two principal parts by a narrow channel: in many places they are dry at low water, and some spots appear even sooner. The northern division is of a triangular form, lying north and south, being about 3½ miles long, and 2½ miles broad: the north end, called the North Sand Head, is about 7 miles from the coast, its position being marked by a light-vessel. The Bunt Head, on the west-side, is very dangerous. The largest spot that dries on this sand has got from the seamen the name of Jamaica Island. The south part of the Goodwin Sands is about seven miles in length; at its north end it is about 2½ miles in breadth, gradually diminishing towards the south-west, till it terminates in the narrow point called South Sand Head, marked by a light-vessel, moored about three miles from shore. But it is right to observe, that the position of these sands varies more or less every year, through the joint influence of storms and tides.

The South Foreland forms the eastern point of the Kentish shore: two light-houses are erected on it, to warn mariners arriving from the west and south of their approach to the Goodwin Sands. The North Foreland is, by act of parliament, declared to be the most southerly part of the port of London. It projects into the sea nearly in the form of a bastion, and is somewhat higher than the adjoining coast; a light-house was erected on it so early as 1683, for the general convenience of mariners, but more particularly to excite their attention to the Goodwin Sands, and to point out the Gull stream or channel, leading inside the Sands to the Downs. Ramsgate lies a little to the south of the North Foreland: it is a pier harbour, and has been formed at an immense expense. Still, however, owing to the want of water, it can only be entered at certain times of the tide. All vessels passing on the south side of the North Foreland, are said to enter the channel; and all the towns and harbours between London and it, whether on the Kent or Essex shore, are members of the port of London.

Few topics connected with the progressive geography of England, are more interesting than that which relates to the past and present state of the Isle of Thanet. It is now scarcely a river peninsula; but, during the Roman ascendancy, it was a complete island, of a circular form. At that period, the sea on its south-west side, between it and the mainland of Kent, was at least four miles broad, gradually decreasing as it flowed through the strait, till, at Sar, where it was narrowest, its breadth did not, probably, exceed a mile and a half. Thus far flowed the south, which there met the north, sea: the latter entered at what was, from this circumstance, called Normutha, *i. e.* Northmouth. We have the explicit testimony of Ammianus Marcellinus to prove that the direct route and accustomed passage to London by sea, so late as the middle of the fourth century, lay through this channel.* In the time of Bede, however, its breadth was considerably diminished; for he tells us, that it was then but three furlongs wide, so shallow, that it was fordable in two places, and that it was thence called Wantsome, or the deficient water. It continued, however, a passable strait for ships of some burthen, till about the time of the Norman Conquest, when the inhabitants, perceiving that the tide no longer flowed with any considerable vigour, began to erect dykes to keep it out; in which object they were at length completely successful. Thus, the Isle of Thanet, which was formerly separated from the rest of Kent by the channel called the *Portus Ritupensis*, and was, in its natural state, all high land, is now a peninsula, or, at most, a river-isle only, having the Stour-wantsome on the south, the Mile-stream on the south-west, and the Nethergong-wantsome on the west. The rest of the Island fronts the east and north seas, as before; but its figure is altered from that of a circle to an irregular ellipse. After the junction of the isle to Kent, the sea, no longer finding a passage through the strait, began to throw up immense quantities of beach on the eastern shore, which produced Stonar, or rather Estanore, that is, the east-stone-shore: this was originally a separate island, but it was speedily united, by a causeway, to the Isle of Thanet.†

Proceeding westward from the Isle of Thanet, the coast of Kent, which still fronts the north, becomes marshy as it descends by Whitstable to the narrow channel, called the Swale, separating the Isle of Sheppy from the mainland. This channel unites with the æstuary of the Medway, a little below Sheerness, where the latter falls into the Thames.

We subjoin a table of the latitudes and longitudes of the principal places on the coasts of England and Wales. They are mostly derived from the Ordnance Survey.

Principal Headlands and Places on the coast of England and Wales, with the latitude and longitude, as given by the best authorities.

PLACES.	Lat.	Long.
	° ′ ″	° ′ ″
London (St. Paul's) - - - - - -	51 30 49 N.	0 5 47 W.
Greenwich (Observatory) - - -	51 28 39	0 0 0
The Naze - - - - - - - -	51 51 51	1 17 7
Harwich - - - - - - -	51 56 43	1 17 8
Lowestoffe (Lighthouse) - - - -	52 29 10	1 45 14
Cromer (Lighthouse) - - - -	52 55 20	1 19 30
Spurn Head (Lighthouse) - - - -	53 34 44	0 7 0

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* Ammiani Marcellini Hist. lib. 20. c. 1.

† Those desirous of further information on this curious subject, may consult Dr. Campbell's "Survey," vol. i. pp. 394—397., who has displayed great industry and learning in tracing the successive changes, of which the Isle of Thanet and the coast of Kent have been the theatre.

Principal Headlands and Places on the Coast of England, &c. — *continued.*

PLACES	Lat.			Long.		
	°	′	″	°	′	″
Flamborough Head	54	7	0 N.	0	0	5 W.
Hartlepool	54	41	49	1	10	31
North Shields	55	0	48	1	26	27
Berwick	55	40	20	1	59	46
St. Bees' Head (Lighthouse)	54	30	55	3	37	24
Formby Point (Lighthouse)	53	32	21	3	3	54
Liverpool (St. Paul's Church)	53	24	40	2	58	55
Great Orme's Head	53	20	2	3	50	21
Holy Head	53	18	51	4	39	27
Bardsey Island (Lighthouse)	52	45	0	4	47	0
Cardigan	52	4	59	4	38	18
St. David's Head (Cathedral)	51	52	56	5	14	53
St. Anne's Head (Lighthouse), Milford Haven	51	40	59	5	10	25
Swansea	51	37	13	3	55	32
Flat Holm (Lighthouse)	51	22	33	3	7	3
Hartland Point	51	1	23	4	30	26
Trevose Head	50	32	58	5	0	54
Land's End	54	8	0	5	41	31
Scilly Islands (Lighthouse)	49	53	38	6	19	23
Lizard Point (Upper Lighthouse)	49	57	41	5	10	39
Rame Head	50	18	53	4	12	29
Plymouth (New Church)	50	22	22	4	7	16
Eddystone (Lighthouse)	50	10	56	4	15	3
Start point (Lighthouse)	50	13	22	3	37	43
Portland Bill (Lighthouse)	50	31	23	2	26	49
St. Alban's Head	50	38	10	2	6	15
The Needles (Lighthouse)	50	39	54	1	33	55
St. Catherine's Point (Isle of Wight)	50	35	34	1	17	51
Portsmouth (Academy)	50	48	4	1	5	59
Selsey Bill (Church)	50	45	19	0	45	41
Beachy Head (Lighthouse)	50	44	24	0	13	0 E.
Dengeness (Lighthouse)	50	55	1	0	57	48
Dover Castle	51	7	47	1	19	7
South Foreland (Lighthouse)	51	8	26	1	22	6
North Foreland (Lighthouse)	51	22	25	1	27	0

SECT. 7. *Geology.*

The unrivalled prosperity and extent of the manufactures of Great Britain are owing, in no small degree, to the abundant supply of coal, ironstone, limestone, rock-salt, lead, copper, and tin, which the country affords; an account of its geology, comprising the repositories of its mineral and metallic treasures, cannot, therefore, be deemed uninteresting to the general reader. In the present brief survey of the geology of England, we shall commence with a description of the lowest, or most ancient rocks: they compose the loftiest mountains and mountain ranges in the island, and form the most important features in its physical geography.

The principal rocks and strata in Great Britain and Ireland are divided by geologists into the following classes: —

1. *Primary rocks*, comprising all varieties of granite, slaty granite called gneiss, mica slate, and ancient porphyry: their characters are hardness and durability; they are more or less crystalline, and sometimes form entire mountains.

2. *Transition*[*], *or intermediate.*—Slate, called clay-slate, of which roof slate is a well known variety, subcrystalline limestone, called transition limestone, and mountain limestone; coarse slate and slaty sandstone, called by geologists greywacke, and various porphyritic rocks. It is in rocks of the first and second class that all the valuable metallic ores in Great Britain are found, except ores of iron, which occur in almost every kind of rock, more or less abundantly.

The regular coal formation of Great Britain, or the strata of sandstone, soft slate, coal, ironstone, and clay, sometimes called the coal measures, may be placed in the upper part of the transition series; as no well-characterised line of demarcation can be drawn between the lower strata of the coal measures, and the upper transition strata.

3. *Secondary strata* consist of conglomerate beds[†], sandstone, earthy and compact limestone, with beds of clay and sand, and, lastly, of chalk. The names given by geologists to the different series of beds will be afterwards noticed.

4. *Tertiary strata.* In England, these strata consist chiefly of sand and clay of considerable thickness: they cover the chalk beds in some of the southern counties. In many parts of the Continent, the tertiary strata possess a considerable variety of mineral character, and occupy great extent. The tertiary strata are unknown in Scotland and Ireland.

Besides these four classes of rocks, there occur in various parts of Great Britain and Ireland, rocks of basalt and trap, which are closely allied to volcanic rocks.

If we take a coast survey of Great Britain, passing westward from Torbay, in Devonshire, to the Land's End, in Cornwall, and thence northward along the western side of Wales to the borders of Scotland, we shall find all the rocks that border the sea are either primary or transition, but chiefly the latter, with the exception of a small extent of the coal strata in St. Bride's Bay, Pembrokeshire, and near Whitehaven, in Cumberland. If we extend our survey to the northern extremity of Scotland, and thence south to Kincardineshire, the whole of the coast, with some exceptions, which will be afterwards noticed, is chiefly composed of granite, slate, and other primary and transition rocks, intermixed with trap rocks, and, in some parts, covered with beds of ancient conglomerate (old red sandstone).

Proceeding southward, from Stonehaven to the river Tyne, in Northumberland, a considerable change in the character of the rocks may be observed: coarse conglomerate and sandstone, with trap rocks and strata of the coal formation, border the coast and extend inland.

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[*] The term transition is used in such different senses by different authors that it has led to great confusion. By some, it is intended to embrace all the carboniferous system: by others, it is applied exclusively to the strata beneath the old red sandstone.

[†] Conglomerate beds, or beds composed of fragments and rounded pieces of rocks cemented together, occur also among transition rocks.

From the Tyne to the eastern extremity of Kent, and thence along the southern coast to Devonshire, we may observe a most remarkable geological change; for in the whole of that extent of coast, not a single rock can be found, *in situ*, similar to the rocks on the whole western coast of England. Nor can any rock be found, from the western coast of Devonshire to that of Cumberland, similar to those on the eastern and south-eastern side of England. It is further deserving notice, that only a few slight traces of the calcareous rocks which cover the eastern and south-eastern side of England, occur any where in Scotland. The rocks and strata on the coast, as we proceed from Tynemouth to Kent, and thence along the British Channel to Devonshire, whence we started, belong to the 3d class, called by geologists secondary: they consist chiefly of red sandstone, magnesian limestone, and beds of grey limestone, called lias, and of yellowish limestone called oolite, intermixed with beds of clay, sand, and sandstone, and, lastly, of chalk. Over the chalk, in a few situations, there are beds of sand, clay, and limestone, which are classed by geologists as tertiary. These secondary and tertiary strata will be afterwards more particularly described: it may suffice for our present purpose to remark, that chalk, which is well characterised by its colour and structure, forms bold cliffs at Flamborough Head, in Yorkshire, and on the coast of Kent, particularly near Dover; also at Beachy Head, a promontory on the Sussex coast, and in the Isle of Wight. It has been supposed, that from these white chalk cliffs, England originally received the name of Albion. Except, however, in the counties here mentioned, chalk seldom attains any considerable elevation on the coast. Near Torbay, the secondary strata terminate; and here we complete the rapid coast survey of the whole island.* Taking a closer view of the rocks and strata that border the sea, particularly on the eastern and southern sides of Great Britain, we cannot avoid being impressed with the conviction, that they are more or less rapidly wearing away; for the impeteous action of tides and breakers, is almost incessantly undermining the cliffs, until large portions are precipitated on the shore. The fragments for a while protect the base of the rocks from further encroachment, until the ocean, impelled by violent storms, sweeps them away, or employs them as engines of destruction, dashing them against the rocks from which they have fallen.

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* In this coast survey, we have taken only the outline of the island, without entering bays, or the mouths of rivers, that cut inland into the country. The bay, or indentation, on the western side of Lancashire, is bordered by low marsh land and sand, and a narrow strip of red sandstone occurs on the coast of Cumberland to the south of Whitehaven. In the north-west of Scotland, the primary rocks are, in some parts, covered near the coast with beds of red sandstone and conglomerate. Caithness is occupied by flagstones, passing down into conglomerate; and similar beds of conglomerate also skirt the coasts of the Dornoch and Murray Friths. This conglomerate, at least the greater part of it, is classed by Dr. Macculloch with primary rocks; but Professor Sedgwick and Mr. Murchison have shown that it is the old red sandstone. — (*Geological Transactions.*)

That the sea is making considerable encroachments on the land cannot be doubted; in some situations the annual progress of these encroachments is very sensible, in others no considerable change takes place in the life time of one generation; but we learn from authentic documents, that, in the course of a few centuries, many villages and entire parishes have been gradually engulfed in the sea. In some instances ancient encampments, of which there are no historic records, are partly obliterated by the sea; though there is reason to believe that they were originally at a considerable distance from it. Even on the western side of our island, where a barrier of granite and other hard rocks is opposed to the ocean, its encroachments on the land are rendered sensible in the lapse of centuries. Some geologists suppose that the Scilly Islands were once united to Cornwall. Cæsar, who is generally accurate in his geographical descriptions, says, that the western side of Britain faced the coast of Spain. As the rocks bordering our coast have extended farther than their present limits, an enquiry naturally presents itself—*Was Great Britain ever united to the continent of Europe?* An examination of the rocks and strata on the coast of France, proves that they correspond with the English rocks and strata opposite to them in a remarkable manner, so as to leave little doubt that the chalk and other secondary strata on the northern side of France, once formed continuous beds with the similar secondary strata on the south side of England. Geologists have hence too hastily concluded, that Great Britain was once united to the continent of Europe: but the former continuity of the beds does not prove this; for the chalk strata, for instance, were originally deposited deep under the ocean, of which we have demonstrative evidence in the abundance of shells and other remains of marine animals, that occur in almost all the beds, which are in some parts a thousand feet thick. These chalk strata, with the strata on which they rest, have therefore been raised from the ocean to their present elevation. We have no evidence, however, to prove that the epoch when this elevation took place and the chalk became dry land, was the same in both countries; or, if both countries were elevated at the same period, a fracture of the strata might take place, caused by the upheaving force itself, into which fracture the sea might enter and divide England from the continent, at the moment of their becoming dry land. Thus, though the strata of England and France were continuous, we cannot say that these countries were ever united, unless the separation took place after the period of their emergence from the ocean; for before that time they were not countries, but formed a part of the bed of the sea. Whether the valley or gulf called the British Channel, were originally formed by disruption, or by subsidence, there can be no doubt that it has been subsequently enlarged by the action of the sea, on both the opposite coasts. The cliffs near Boulogne have been carried away to a considerable extent since the country was under the dominion of the Romans. This is proved, by the ruins of a celebrated Pharos or lighthouse, situated on the eastern side of the harbour, at some distance from the cliffs, the ruins of which are nearly obliterated by the gradual wearing away of the coast: even within the last three centuries great changes have been made on that coast, as is proved by ancient maps of the harbour and town. The eastern side of England presents indications of the former extension of the land towards Belgium. The remains of ancient forests may be observed at low water, on the shores of Yorkshire and Lincolnshire, stretching far into the sea; the roots and broken trunks of the trees are believed to be in the situations in which they grew, though they are at present many feet below the high-water mark. Similar remains of trees may be traced inland on the eastern side of Yorkshire and Lincolnshire, covered with alluvial soil to the depth of 17 feet or more. These subterranean and submarine forests indicate a subsidence of the land at an epoch of no very remote date, as the trees are of species indigenous to Great Britain. We do not deem it improbable that the bed of the German Ocean was formed by a subsidence of the land. Whether the island of Great Britain emerged from the sea at one epoch, or by successive elevations, may be uncertain; but we have evidence to prove that its limits have not always been the same as at present. Additions are making to the surface, in some situations, by tidal and alluvial depositions, and extensive tracts of meadow ground have been gained from the sea in Cambridgeshire and Lincolnshire, at a recent period.

The limits of this article will not permit us to dwell longer on the ancient extent of our island. After the general survey we have taken of the coast of Great Britain, we shall find it most convenient to treat of the geology of England and Scotland separately. The geology of Wales is more immediately connected with England, for that principality, in respect to its physical geography, is as much a part of England as Devonshire.

England, including Wales, may conveniently be divided into three geological districts:—1st. The alpine, comprised of the primary and transition rocks. 2d. The middle district, containing the coal, and lower secondary strata. 3d. The eastern and south-eastern districts, composed of the upper secondary strata, above the red marl and sandstone. These strata are in some parts covered by tertiary strata.

The alpine district, extending from Devonshire to Cumberland, is divided into three distinct groups or ranges, by the intervention of the Bristol channel, which separates Devonshire from South Wales, and by a deep indentation of the Irish Sea, which separates the mountains of North Wales from those of Westmoreland and Cumberland. These three groups or ranges, we shall for the sake of distinction denominate, as we have elsewhere done (see p. 8.), 1st, the Devonian range, comprising the counties of Cornwall and Devonshire, except a small part of the south-western side of the latter, and including also a small part of Somersetshire adjoining the Bristol Channel; 2d, the Cambrian range, which comprises almost the whole of North and South Wales; and 3d, the northern or Cumbrian range, including the greater part of Cumberland and Westmoreland, the extremity of Lancashire north of Merecombe Bay, and the western parts of Yorkshire, Durham, and Northumberland, adjoining Westmoreland and Cumberland.

Besides these primary and transition districts, a series of similar rocks may be traced in a north-east direction from Devonshire to Derbyshire: they make their principal appearance at the Malvern hills in Worcestershire, and Charnwood Forest in Leicestershire.

The Devonian range, though presenting a bold and rocky coast, both to the British Channel on the south, and the Bristol Channel on the north, can scarcely be said to assume a mountainous character, except at Dartmoor Forest and some parts of North Devon.

The granite in this range commences near the Land's End, and extends to Dartmoor; but is covered in several parts by slate rocks, which may be said to divide it into insulated masses: at Dartmoor, where it terminates, the granite is more extensively developed, and rises to the height of about 1,700 feet. The slate, which rests upon granite, is* provincially called killas; it has often a silvery lustre, approaching to mica slate. Rocks of serpentine and talcose mica slate occur at the Lizard; some serpentine is also found near Liskeard, in Cornwall. Felspar-porphyry occurs in beds, in granite, and in irregular masses imbedded in slate rocks. With these exceptions, the mass of rocks that cover the northern and the southern sides of Cornwall and Devonshire, on each side of the granite, are chiefly different varieties of slate; but in this extensive slate district, roof slate of a good quality is not abundant. The slate rocks are often much contorted, and this is the case also with beds of limestone, that occur in some parts of the district near to granite. The granite is commonly white, or rather whitish grey, composed chiefly of white felspar, with a small quantity of quartz and mica. In this granite, large crystals of felspar are often imbedded, giving it a porphyritic structure, as may be seen in many of the flag-stones in the streets of London, which are of Cornish granite. The granite is sometimes intermixed with schorl or tourmaline. The granite of this district is quarried for building and paving stones; it is not so hard and durable as the Aberdeen granite, but it can be raised in more regular slabs. We were informed by the quarrymen, that when first raised it may easily be cut with the saw, but it soon loses this property on exposure to the air. Some of the granite of this district appears to decompose rapidly; and it is evident from the beds of decomposed granite in the valleys and on the coast, that the granite mountains of Cornwall have been once higher than at present; which gives some countenance to the theory of those who suppose that the Scilly Islands, and the rocks called the Long Ships, off the Land's End, were once united to Cornwall. Some of the soft white granite is a valuable substance for the manufacture of porcelain and fine earthenware. Steatite, or soap-stone, is also obtained in Cornwall, and used in the same manufactures.

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* In a memoir recently read before the Geological Society, Professor Sedgwick and Mr. Murchison have shown that more than one third of Devonshire is composed of strata of the age of the *coal measures*, and that the granite of Dartmoor has penetrated these deposits. The remainder of the county is occupied by older slaty rocks of the greywacke series of old authors. New red sandstone and green sand overlie unconformably these ancient rocks, as well as the carbon-bearing or carboniferous strata.

The principal mineral treasures of this district are its ores of tin and copper. Tin is a rare metal in Europe; it is never found native like gold, silver, and copper, which not unfrequently occur in a pure metallic form. The most common ore of tin, called tin-stone, is of a dark brown, or reddish brown colour, and is destitute of metallic lustre; the crystals of this ore are sometimes semi-transparent. This ore is extremely hard, striking fire with steel. It is nearly as heavy as metallic tin; it is composed of about 77 parts of metallic tin, and 21 of oxygen, with a small trace of iron and silex. In all probability, metallic tin was first discovered by accidental fires made over masses of tin ore; for this ore is reduced to the metallic state when heated with charcoal. The tin ore of Cornwall and Devonshire occurs in veins in granite rocks, or in schist adjoining granite; it is also found in the form of grains and pebbles in the sands of rivers and valleys, and in some parts of the sea-shore. These fragments and pebbles of tin ore have evidently been derived from veins in rocks that have been decomposed and washed away; as the tin ore is harder and heavier than the granite, it remained in the form of water-worn pebbles; but portions of the rock are also found with them, which, in many instances, enable the miners to ascertain from what part of the country they have been transported. A considerable quantity of tin is obtained from these layers of tin pebbles, which are often covered to a great depth by beds of clay, sand, and gravel. The ore so obtained is called stream tin. The veins of tin ore vary in width from a few inches to several feet; they generally intersect granite and slate rocks in an easterly and westerly direction, and decline more or less from the perpendicular direction as they descend. The same vein which contains tin ore, generally contains ores of copper at a certain depth; tin ore commonly occupies the upper part of the vein. When Pryce wrote the Mineralogy of Cornwall, about the middle of the last century, "it was believed, that the richest state of a mine for copper, in that county, was from 80 to 100 yards deep; and for tin, from 40 to 120 yards." Mines have now been sunk to the depth of nearly 600 yards from the surface; and tin ore has been found at the depth of 420 yards. No vein, we believe, has yet been worked out in depth; and since the introduction of steam engines of immense power, for clearing the water from mines, it is not possible to assign the limits to which they may be worked. Some of the mines are worked to a considerable distance under the sea. For more than 2,000 years, tin has been obtained in large quantities from Cornwall; but, during that period, the copper ore, which is far more abundant than that of tin, was neglected and thrown away, its true nature being unknown: it has now become of vast importance.—(See *Section on Mines.*) The copper ore is chiefly the bisulphuret, or copper pyrites, intermixed with iron pyrites, and other mineral matter, which makes its extraction more difficult than that of tin. Most of the copper ore is smelted near Swansea in Wales.

It is said, that before the nature of the copper ore was known, the miners considered its appearance as so unfavourable, that they abandoned the mines, saying the "*poder* (as they called the copper ore) came in and spoiled the tin." "About the year 1735, Mr. Coster, a

Bristol mineralogist, observed this *poder* among the heaps of rubbish, and, seeing the miners unacquainted with its value, he formed the design of converting it to his own advantage: the scheme succeeded, and he continued for a long time to profit by Cornish ignorance."—(*Guide to Mount's Bay.*) Tin ore is disseminated through granite itself in some instances, but this is in the vicinity of veins. The most common vein stone which accompanies the ores of this district, is quartz. Native gold has been found among the stream tin, and small quantities of native silver, with red silver ore, have been found in some of the Cornish mines. Lead, zinc, and antimony, also are found in several veins. In some of the slate rocks in the south of Devonshire, there are veins of lead ore, which are rich in silver, containing 70 ounces of silver in the ton of lead; but the ore is not abundant, and is obtained with difficulty, being intermixed with quartz. The oxide of manganese is found in considerable quantities at Doddiscomleigh and Upton Pyne, not far from Exeter: it occurs in veins of about 4 feet in thickness; but in one of the mines, in the year 1815, we observed it collected in a mass 20 or 30 feet in thickness. It is, also, met with in great abundance near Tavistock and Launceston. The above are the principal metallic and mineral treasures contained in this district. The transition limestones, in the south of Devonshire, are beautifully spotted and variegated, and are extensively used as marbles.

The Cambrian range. — On crossing the Bristol Channel to the opposite coast of Glamorganshire, we meet with an extensive series of coal strata, that cover the transition rocks of this part of South Wales, and terminate in Pembrokeshire. This coalfield is nearly 100 miles in length from east to west, and from 5 to 20 miles in breadth. Except in Swansea Bay, and Carmarthen Bay, it is almost every where surrounded by mountain limestone and old red sandstone. This is the most extensive coalfield in Great Britian, and will be afterwards more particularly noticed.

The loftiest mountains of the Cambrian range spread through Caernarvonshire and Merionethshire: chains of mountains of lesser height branch from thence, through the western and southern counties of Wales, and into Monmouthshire and part of Herefordshire, and Shropshire. (See *antè*, p. 13.)

Several of the mountains in Caernarvonshire exceed 3,000 feet in height; Snowdon, the highest mountain in South Britain, is 3,571 feet above Caernarvon Bay. The general outline of this part of the Cambrian range, from Penmanmaur to the Rivals, on the southern extremity of Caernarvon Bay, is highly picturesque, and presents to the tourist the most magnificent alpine scenery of South Britain; but the lakes of this district by no means correspond with the magnificence of the surrounding mountains: they are small and uninteresting. The mineral character of the rocks affords little variety; they are chiefly composed of different kinds of slate, clay slate and chlorite slate, with felspar-porphyry. Quarries of excellent roof slate are extensively worked in this part of Wales; and some veins of copper ore are found in Caernarvonshire; but they are of little importance. The Isle of Anglesea, separated from Caernarvonshire by the straits of the Menai, is far from mountainous; the rocks have a low elevation, and rise through the soil in small ridges, or detached peaks. On the western side of the island are rocks of granite, mica slate, and serpentine. The prevailing rock of the middle part of the island is slate. The Paris copper mine, formerly so celebrated for the quantity of copper which it yielded, is situated on the north side of the island; the body, or internal part of the Paris mountain, consisted of an accumulated mass of ore, which is now supposed to be nearly worked out. On the south-east side of the island, there is a small coalfield, which appears to cover mountain limestone. A remarkable trap-dyke, which intersects the rocks in Anglesea, has been particularly described by Professor Henslow in the Transactions of the Philosophical Society of Cambridge. The mountains which range from Snowdon into Merionethshire are many of them composed of porphyritic trap; a rock which is closely connected with basaltic rocks, and, like them, is supposed to have an igneous origin. Cader Idris, one of the most remarkable of these mountains, has a deep depression or crater near its summit; and, on the northern side of the mountain, there are groups of regular columns or prisms of porphyritic trap. It is observed that, where beds of similar trap occur in the slate rocks of this district, the beds of slate appear contorted by the intrusion of the trap. The height of Cader Idris is 2,914 feet. There are other adjacent mountains of equal elevation, and composed of similar porphyritic trap. Though rocks of porphyritic trap may, in some countries, be seen passing into basalt, and other rocks of undoubted volcanic origin, there is no appearance that the crater of Cader Idris has ever ejected lava or scoriæ. There is a mountain in Cumberland, called High Stile, near the lake of Buttermere, which is composed of a similar rock, and has a deep crater near the summit. We have elsewhere offered the following observations on the structure of these remarkable mountains: — "Though the rocks round this crater are clearly allied to volcanic rocks, and have probably been subjected to the agency of subterranean fire, yet the crater is not composed of lava and scoriæ, like that of modern volcanoes. The opinion of Von Buch, that some volcanic mountains have been upheaved bodily in a solid mass, would, if admitted, elucidate the formation of Cader Idris and High Stile. The craters may not have ejected lava, but may have served for vents to the elastic fluids or steam, that, combined with heat, were the agents by which the mountains were upheaved; or we may suppose the craters to be formed by a *partial sinking* down of the summits, when the mountains were softened by heat."— (*Bakewell's Introduction to Geology*, 4th ed. p. 193.)

It is a fact well deserving attention, that beds of gravel and sand, with marine shells, have recently been found on some of the mountains of Caernarvonshire, at the height of 1,400 feet above the sea; the shells are said to resemble the broken shells on the beach. A great part of Denbighshire, with Montgomeryshire, Radnorshire, Cardiganshire, Caermarthenshire, Pembrokeshire, and the north part of Brecknockshire, are composed of slate (clay slate) and greywacke, presenting little variety of mineral character. Indications of the proximity to granite may be seen in some of the valleys. North of St. Bride's Bay, near the western extremity of Pembrokeshire, there is a group of rocks, chiefly composed of syenite and porphyry; and on the east side of Radnorshire, near New Radnor, there are two mountains, called Hanter and Stanner, composed of diallage rocks. Near Llandegley, a few miles west of Radnor, is a low range of jagged rocks, composed of vesicular brown claystone, which may be regarded as a decided igneous rock. The counties we have enumerated, as chiefly composed of slate and greywacke, are bounded on the south and south-east, from Pembrokeshire to Shropshire, by various beds of old red sandstone *, passing in some parts into greywacke, imperfect porphyry, and slaty sandstone; and, in the upper part, alternating with beds of greenish limestone and mountain limestone. These beds of old red sandstone cover the south parts of Brecknockshire, and nearly the whole of Monmouthshire and Herefordshire. From Caermarthen to Wenlock Edge, in Shropshire, a range of beds may be traced of the lower transition limestone, which runs along the northern boundary of the old red sandstone. Similar limestone, also, appears occasionally, within the limits of the slate and greywacke district, in several parts of North Wales; it is distinguished, by its fossil organic remains, from the mountain limestone; but it is often much intermixed with argillaceous earth, and it contains no metallic veins. † The eastern side of North Wales, in the counties of Denbigh and Flint, is bounded by a considerable extent of mountain limestone, in which are many valuable lead mines. In these countries, the lowest beds of this limestone often rest upon a thick bed of coarse conglomerate, which intervenes between the limestone and slate rocks.

Cumbrian or Northern Range.—The mountains in this range may be regarded as a continuation of the mountain ranges of North Wales, which they closely resemble in their mineral characters. The highest mountains of this district surround the lakes of Cumberland. —(See *antè*, p. 9.) The mountains surrounding the lakes are chiefly composed of slate, containing some good beds of roof slate, chlorite slate, flinty slate, porphyritic felspar, compact felspar, and greywacke, and imperfect hornblend slate. Granite occurs at Caldbeck Fell, under Skiddaw, and near the lake of Wastwater, and also near Shap, in Westmoreland, forming in the latter situation a low insulated mountain, composed of a peculiar kind of small-grained granite, containing large brilliant crystals of red felspar. It may easily be distinguished from any other granitic rock in Great Britian; but it is truly remarkable, that large blocks of the same granite are scattered over distant parts of Westmoreland, Lancashire, and Yorkshire, though the existing mass of granite, near Shap, is every where surrounded by mountains of much higher altitude. Near the lake of Buttermere, the mountain called High Stile has a depression or crater on its summit, nearly surrounded by phonolite, a rock closely allied to basalt: it is rudely columnar, and easily fusible. This mountain bears a striking resemblance, in structure, to Cader Idris, in Merionethshire, before mentioned. The crater is filled with water, and forms a small lake.

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* Called old red sandstone, to distinguish it from the red sandstone above the coal strata.

† Since the above was written, R. I. Murchison, Esq., has completed a very detailed geological survey of the upper transition rocks, that occur below the old red sandstone, and above the older slaty rocks in Herefordshire, Shropshire, and the adjoining counties of Wales. The aggregate thickness of these beds is stated to exceed 7,000 feet; they consist of sandstone, often approaching in structure to slate, coarse schist, freestone, and various beds of limestone, distinguished by their organic remains. The beds are for the most part stratified in regular succession. Mr. Murchison is about to publish a full description of this hitherto obscure branch of geology. He terms these rocks the Silurian system. His work, embracing an area of eleven counties, will point out *transitions* throughout the geological series, from the inferior oolite to the slates of Wales.

The summit of Scaw Fell is a trap porphyry, also closely allied to igneous rocks: beds of felspathic porphyry occur in many of the slate mountains, the different rocks appearing to pass into each other. In the mountains of Borrowdale, and near Loweswater, a bed of red unctuous ferruginous clay, with ironstone, occurs in contact with beds of grey felspar-porphyry. It is near the contact of these beds, that the irregular pipe vein occurs, which forms the celebrated blacklead mine of Sotaller, in Borrowdale. The mine is situated on the side of a steep mountain, the beds of which are inclined at an angle of about 40 degrees. The blacklead, or graphite, is found in irregular nodules of various sizes, intermixed with quartz, greenearth, calcareous spar, and ironstone. The vein is in some places narrow, and in others opens out to a considerable width. We were informed in the mine, that the lower side of the vein is the most productive. It is said, that it generally becomes rich in ore where cross veins enter the principal vein. The graphite or blacklead from this mine is superior in quality to any other. We were informed that the smaller pieces sell for 70*l.* per ton, and the larger pieces for 40*s.* per lb., and that as much ore as would sell for 1,000*l.* had been obtained in one day. The mine being on the side of a steep mountain, no engines are necessary to drain it; and a very few men and children are required to work the mine, and dress and pack the blacklead. We believe no mine of equal value was ever worked at so small an annual expense as the blacklead mine of Borrowdale. In a similar bed of red unctuous clay, the iron mines near Ulverstone occur, from which the rich hematites are obtained, that yield the most ductile iron in Great Britain, much used for card wire, in the cotton and woollen manufactures.

The beds in the central mountains of this range are much inclined, and present indications of violent disturbing causes, by which they have been broken or displaced. The valleys and beds of the lakes have, in all probability, been formed by depression, at the period when the mountains were elevated. The present depth of the lakes by no means corresponds with the height of the mountains; and they are evidently progressively filling up, and diminishing in extent, by the quantity of débris from the neighbouring mountains, which are brought into them by descending torrents. We believe few of the lakes are at present much more than 300 feet in depth, in their deepest parts. It is evident that many of the flat valleys, that form rich meadows, were once lakes, which have become gradually filled up, and are now only intersected by small rivulets. The schistose and porphyritic mountains of this district contain a small quantity of copper ore. Mines are said to have been extensively worked at a former period; but the works have been long discontinued. Antimony, lead, and manganese, occur in small quantities in some of the mountains. The mountains which surround the central group are principally composed of greywacke, which often seems to pass into a greyish trap rock, but beds of good roof slate occasionally occur. The intermixture of rocks, believed to be of igneous origin, with other rocks of aqueous origin, Professor Sedgwick, with much probability, refers to submarine volcanic action, and the simultaneous action of igneous and aqueous causes, which have been often repeated. The greywacke beds, that surround the central group of the lake mountains, are bordered nearly all round by beds of mountain limestone; this limestone, called by some geologists carboniferous limestone, occupies but a narrow strip of country, on the north-west, north, and north-east sides of the lake mountains; but on the eastern and south-eastern sides, it unites with the great expansion of this formation that extends into the north-west of Yorkshire and the district called Craven; and on the east and north-east, it branches into the western parts of Durham and Northumberland, in which counties it is particularly rich in lead veins. In Craven, the lofty mountains of Ingleborough, Whernside, and Pennigent, are chiefly composed of beds of mountain limestone; but the two former are capped with beds of sandstone. The limestone of this district rests on greywacke slate, but is sometimes separated from it by beds of conglomerate. On the north-west of the lake mountains, from Whitehaven to the north of Maryport, the mountain limestone is covered by coal strata, which extend under the Irish Sea. On the north-east side of the lake mountains, the vale of Eden, filled with red sandstone and conglomerate, separates Cross Fell and a lofty range of hills of mountain limestone, in the county of Durham, from the mountains of Cumberland and Westmoreland. The separation of these mountain ranges, and the formation of the valley of Eden, according to Professor Sedgwick, appear to have been effected by the violent action of disturbing forces, of which indications may be traced in faults, that range at the foot of Cross Fell, and thence into Craven, in Yorkshire. Cross Fell is the highest limestone mountain in Great Britain, being 2,900 feet above the level of the sea, but the upper part is capped by coal strata. From the summit of Cross Fell, when the weather is extremely favourable, both the Irish Sea and the German Ocean are said to be visible. From its inland situation, snow remains very long upon Cross Fell; some years it has remained all the summer.

Beyond the limits of the great expansion of mountain limestone, in the counties of Northumberland, Durham, and the north-west of Yorkshire, a branch of the same limestone formation extends into Derbyshire and the north part of Staffordshire; but the continuation is apparently interrupted by beds of sandstone, which cover the limestone from Skipton in Craven, to Castleton in the Peak of Derbyshire. The mountain limestone in Durham and Derbyshire is broken by irregular beds of basaltic rocks, which run between the beds of limestone, and sometimes cover them on the surface. Near the banks of the river Tees, beds of basaltic rocks form ranges of columns of considerable extent.

In describing the geology of an extensive country, we frequently find certain rocks so far situated beyond the limits of the districts to which they may be said to be appropriate, that they cannot be included in the general description; these rocks are generally allied to volcanic rocks, which, it is obvious, may be protruded in isolated masses, in any part of the earth's surface. Rocks of this class occur in the inland parts of England, in detached masses and groups, from the western side of Devonshire, to Charnwood Forest in Leicestershire. In the vicinity of Exeter there are several low detached trap rocks, particularly of greenstone and syenite. Rocks of the same class occur at Woodford Bridge, south of Berkeley, in Gloucestershire. The Malvern Hills, in Worcestershire and Herefordshire, form a prominent range in that part of England, rising, at the highest point, 1,440 feet: they are composed of syenite and syenitic greenstone, and are generally in a decomposing state near the surface. In a northeast direction we find the quartz rock of the Lickey *, and on the west side of Warwickshire various rocks of syenitic greenstone, and granular quartz near Atherstone. These seem to be connected with the range at Charnwood Forest, in Leicestershire, consisting of syenite passing into granite, syenitic porphyry, and trap, with slate, containing roof slate of an inferior quality. All the varieties of rock in this group seem to pass by gradation into each other. They form a miniature type of the geology of the lake mountains of Cumberland. Since we examined them in the year 1812, the Forest has been inclosed, and a considerable part covered by plantations, which now conceal the surface from observation. Bardon Hill, the highest part of this group, is only 850 feet above the level of the sea; but it forms a conspicuous object, rising from a nearly level country.

The Wrekin and Caradoc hills, in Shropshire, are detached masses of a basaltic formation, composed of greenstone and amygdaloid, with beds of cellular claystone, similar to the rocks of Llandegley, in Radnorshire, which have been before noticed.

Coal Districts. — Having described the primary and transition districts of England, we proceed to notice the coal formations, which are generally found covering transition rocks. If we draw a line from Exmouth to Bath, thence to Gloucester, Warwick, Leicester, Nottingham, and Tadcaster, and from Tadcaster to Stockton-on-Tees, all the parts of England on the east side of that line contain no portion of the regular coal formation, though a small quantity of imperfect coal is found in the eastern moorlands of Yorkshire. The line might, in some situations, be drawn several miles beyond the limits assigned; the whole eastern and southern side of England, within these limits, is composed of the upper secondary strata, in which good mineral coal is never found. The transition and primary rocks on the western side of England are below the coal formations, though in some parts they are covered by coal strata.

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* Mr. Murchison has shown that the quartz rock of the Lickey, Wrekin, and other hills, is the Caradoc sandstone, (a Silurian deposit), altered by the intrusion of igneous or volcanic rocks.

The Northumberland and Durham coalfields cover the eastern sides of these counties, between the sea coast and the mountain limestone on the west, and extend north and south, from Berwick-on-Tweed to the river Tees. The most valuable beds of coal are calculated to cover an area of 24 miles in length, from north to south, and 8 miles of average breadth; there are nearly forty beds or seems of coal, but only about half of these are of sufficient thickness, or sufficiently good in quality, to be worked. As the strata generally rise towards the north-west, and crop out as they advance in that direction, none of the workable beds extend under the whole district. The two thickest and best beds of coal are the High Main and the Low Main coal; they are about 6 feet thick, and are separated by strata of sandstone, shale, and smaller seems of coal, of the average thickness of 360 feet.

As almost all the coal which is consumed in the metropolis is brought from Northumberland and Durham, it becomes an inquiry of much interest to ascertain when the beds of coal in these counties are likely to be exhausted; and as the thickness and extent of the beds, and the rate of consumption, are pretty well known, the question seems to admit of a definite answer. Mr. Bailey, in his Survey of Durham, after making allowance for the quantity of coal already worked out, limits the period of consumption to 200 years. The proprietors of the coal mines, fearing that a stop might be put to the foreign exportation of coal, in a recent examination before the House of Commons, extended the period of exhaustion to 1,727 years. They assumed that there are 837 square miles of coal strata in Northumberland and Durham, and that only 105 miles had been worked out. But many of the best coal beds crop out long before reaching the western termination of the coalfield, or are cut off by faults and denudations; the thickness of the beds was also overstated. We have elsewhere given an opinion on this subject, from which we shall make the following brief extract, after noticing an error of Dr. Thompson, with respect to the consumption of coal, who states the period of exhaustion to be 1,000 years. "According to Mr. Winch, 3,500,000 tons of coal are consumed annually from these districts, to which, if we add the waste of small coal at the pit's mouth, and the waste in the mines, it will make the total yearly destruction of coal nearly double the quantity assigned by Dr. Thompson, who has also greatly overrated the quantity of coal in these districts. With due allowance for these errors, and the quantity of coal already worked out, the period for the exhaustion of coal in these counties may be stated at 350 years. Professor Buckland, in his examination before the House of Commons, states the period of exhaustion, at the present rate of consumption, to be about 400 years.* A cubic yard of good coal will weigh, on the average, one ton; the quantity of waste coal is estimated at one third of the whole." — (*Bakewell's Introduction.*)

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* This estimate was made before the researches of other geologists had shown that large coalfields extend beneath the new red sandstone.

The Yorkshire and Derbyshire coalfield commences north of Leeds and extends about 70 miles in length, from north to south. Between Abberford and Halifax it is 25 miles in breadth, but it decreases greatly in breadth as it passes through Derbyshire, and terminates at Woollerton, near Nottingham. The thickest bed of the Yorkshire coal is worked near Barnsley. The greater part of the coal of this county is required to supply its numerous population, and its important manufactures of woollen and iron. A part of the coal of Derbyshire is carried by canals to the midland counties. Ironstone, of a good quality, is abundant in this coal district. South-west of Derbyshire there are a few small coalfields, in Leicestershire and Warwickshire, near Ashby-de-la-Zouch, Tamworth, Atherstone, and Coventry. The main coal of the Ashby-de-la-Zouch coalfield, at Ashby Wolds, is 13 feet thick. It is worked, in the lowest part, at the depth of 224 yards.

The Coventry coalfield is the most southern situation in which coal has been discovered in the midland counties.

On the north-west side of England we find a valuable small coalfield, extending from Maryport to Whitehaven, containing seven beds of good coal: in one mine it is worked at the depth of 298 yards, and in some mines the workings have been carried on under the Irish Sea. A considerable quantity of coal is exported from this district to Ireland.

The Lancashire coalfield is separated from that of Yorkshire by a range of lofty hills, extending from near Colne to Blakestone Edge, and thence to Ax Edge, in Derbyshire. The coalfields of Lancashire commence near the western side of this range; the strata dip westward, but are more broken and deranged by faults than the Yorkshire coal strata. The principal beds of coal are one of 6 feet in thickness, and a lower one, called the three-quarter bed.

The Lancashire coalfield runs nearly due north from Macclesfield to Oldham, at the feet of the range of hills above mentioned, but in this part it is scarcely more than 6 miles broad: from Oldham, it extends westward to Prescot, near Liverpool, and northward to Rochdale and Colne. The ample supply of fuel which this coalfield yields for the use of the cotton manufactures of Manchester and its vicinity, may be regarded as contributing, in an eminent degree, to their unrivalled prosperity. In the north part of Lancashire there is a small coalfield, on the southern side of Ingleborough, but it is of little importance. South of the great Lancashire coalfield there is a small but valuable coalfield, near Newcastle-under-Line, in Staffordshire: it is about 10 miles in length from north to south, and from 5 to 7 miles in breadth, and supplies the potteries of this district with potters' clay and fuel. There are numerous beds of coal in the different parts of this coalfield, varying in thickness from 3 to 10 feet. A little to the south-east of the pottery coal district, there is a small coalfield, near Cheadle, but it is of little importance.

The coalfield of Wolverhampton and Dudley, in Staffordshire, is the most valuable one in the central parts of England; it contains the thickest bed of coal in South Britain, the main coal varying from 30 to 45 feet in thickness, beneath which are several beds of coal from 3 to 4 feet in thickness; and several beds of coal occur over the main coal. The tract of country containing the main coal is estimated by Mr. Keir to be 7 miles in length, and about 4 miles in breadth; but, beyond this, a much longer space northward is occupied by thinner beds of coal.* The value of the 30 feet bed of coal is not so great as might at first appear, though it be of a good quality, and within the reach of the miner. So much labour and expense are required to support the roof, when the coal is worked away in any part, and so much waste coal is left in the mine unavoidably, that it is calculated that one bed of good coal of 10 feet thickness, with a firm roof, would yield more profit to the miner, per acre, than the 30 feet bed of main coal. The coal of this district rests upon transition limestone, celebrated for its fossil trilobites. This limestone is singularly raised and bent at Dudley Castle Hill and Wren's nest Hill: the upheaving and bending of the strata has probably been effected by the protrusion of basaltic rocks, of which several make their appearance in the vicinity; the basalt is provincially called Rowley rag.

The Dudley coalfield is about 60 square miles in surface; the 30 feet coal occurs on the southern part of the field; it may be seen cropping out between Wren's-nest Hill and Dudley, preserving a compact form. Minor beds of coal, when they rise to the surface, are generally decomposed, forming what is called coal smut. There are two valuable beds of ironstone, of considerable thickness, extensively worked in this district, on which there were about 100 iron furnaces in full activity in the year 1827. This coal district, in proportion to its size, may be regarded as the most valuable mineral repository in Europe. Besides the immense consumption of coal in the various iron founderies, forges, and other numerous manufactories in Birmingham and the adjacent country, large quantities of coal are sent by the canals into the neighbouring counties.

In Shropshire and Herefordshire, there are a few small coalfields; the principal one, at Coalbrook Dale, 10 miles east of Shrewsbury, is 6 miles in length, and about 2 miles broad. Coalbrook Dale, including the adjacent tracts of Ketley, &c., is celebrated for its iron furnaces and founderies. The Clee Hills, near Ludlow, contain some small detached coal basins. The summits of these hills are capped with basalt, a dyke or eruptive channel of which cuts through the most southern of them. The Shrewsbury coalfield is remarkable for containing a bed of freshwater limestone, interstratified with the coal. There is a coalfield on the north-eastern border of Wales, extending from Mostyn, in Flintshire, by the entrance of the valley of Llangollen, in Denbighshire, to Oswestry, in Shropshire: the coal strata are separated from mountain limestone by coarse millstone grit.

The coalfield of the Forest of Dean, on the western side of Gloucestershire, is about 10 miles in length, and 6 in breadth; and is a very valuable repository of this useful mineral. The several beds of coal, and the strata of sandstone that accompany them, are arranged in a basin-shaped concavity, resting on millstone grit and mountain limestone. It is the most perfect type of what geologists call a *coal basin* of any in Great Britain.

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* The limits of this field have since been vastly extended; and it will be shown, in Mr. Murchison's new work, that the richest carboniferous strata are prolonged beneath the new red sandstone to the east and west of the coalfield.

The most southern coalfield in England is situated on each side the river Avon in Somersetshire, and the south of Gloucestershire; it is about 25 miles in length, and 6 in breadth; but it is covered in many parts by beds of red marl and sandstone, and lias limestone. The deepest coal mine in England is stated to be at Radstock, near Bath: it is 409 yards from the surface. There are several small seams of coal in this coalfield, none exceeding about 3 feet; they would scarcely be deemed worth working, were it not for the scarcity of coal in that part of England.

We have now noticed all the repositories of coal in England and Wales deserving attention, except the great coal basin of South Wales, which may be considered the most important coalfield in Great Britain, containing a quantity of coal sufficient to supply its inhabitants for 2,000 years after most of the other coalfields are exhausted. The coal strata extend about 100 miles in length, from St. Bride's Bay, in Pembrokeshire, to Pontypool, in Monmouthshire; but they are broken into by Caermarthen Bay; and the Pembrokeshire coalfield is separated from the South Welsh Basin, properly so called, by a broad band of Silurian rocks. In Pembrokeshire, the breadth is only about 5 miles, but they cover a great part of Glamorganshire. The extent of surface is about 1,200 square miles. The strata are arranged in a kind of trough, and dip down on each side, north and south, towards the centre of the field, or rather to the central axis of the field, along a line drawn from St. Bride's Bay to Pontypool. The deepest part of this coalfield is near Neath. The coal is there 700 fathoms below the highest parts of some of the beds. There are 23 workable beds of coal, the average thickness of which is 95 feet. There are 12 beds of coal, varying in thickness from 3 to 9 feet, and 11 minor beds, varying from 18 inches to 3 feet in thickness. The coal is of different qualities, in different parts of the district; that on the western side being chiefly *stone coal* or *culm*, and on the eastern side, bituminous coking coal, suited for the smelting of iron. Many of the beds of coal and ironstone occur at a great depth from the surface; but the country being intersected by valleys that run north and south, and cut through and lay open the lower beds, the miner can work them at a small expense, by driving levels into the sides of the hills. From the great quantity of ironstone, and the facility with which it may be obtained, iron can be produced at a lower price at Merthyr Tydvil, and other parts of this district, than in Staffordshire, or, we believe, in any other part of Great Britain.

It has been before stated, that a waving line might be drawn from Exmouth to Stockton-on-Tees, east of which no good mineral coal is found; very near the same line, a lofty range of calcareous hills may be traced through England, but with some interruption. On the south side of the Vale of Severn, in Gloucestershire, they are well known as the Cotswold Hills, and the range terminates in the Cleveland Hills, on the east side of the North Riding of Yorkshire.

Between this line of hill, and the transition and coal districts before described, the surface of England is covered by secondary formations, chiefly consisting of red marl and sandstone, called by geologists the new red sandstone, to distinguish it from the red sandstone which sometimes occurs below the coal formation; whereas this new red sandstone, where it occurs with coal strata, always is found above them.

The new red sandstone is regarded as the lowest of the secondary formations that succeed the coal strata in an ascending series. The coal strata are often much bent or inclined, but the strata of red sandstone are nearly horizontal; hence it appears, that the latter were deposited after the coal strata and the transition rocks had been subjected to the action of the disturbing causes, by which the beds were inclined or bent. The relative position may be conceived, by imagining a series of books to be inclined from the perpendicular, and another series to be laid flat over the inclined edges of the former.

The secondary formations of England may be enumerated in the following order, without entering into any of the numerous subdivisions, which it would be useless to introduce in a general outline. We shall begin with the lowest. In some situations, the thickness of the different formations has been ascertained, but this thickness is very variable in distant parts of the same formation.

Magnesian limestone, subordinate to red sandstone.
Red sandstone and red marl.
Lias limestone and clay.
Oolitic limestone, with beds of sand, sandstone, and clay.
Lower and upper green sand, with clay.
Lower and upper chalk.

The new red sandstone and marl is most frequently of the colour which its name implies; its prevailing mineral character is siliceous, but it comprises a great variety of beds, from a coarse conglomerate, composed of large fragments, to a fine-grained sandstone. A series of strata, of magnesian limestone, of considerable thickness, occurs between the lower and upper beds of the new red sandstone, forming a narrow range of low hills, extending from Sunderland to Nottingham.

In the upper part of the red sandstone formation, there are thick beds of red and variegated marl, in which are rocks of gypsum and irregular masses of rock salt. The red marl forms some of the most productive soils in England. The new red sandstone and red marl occupy a considerable part of the midland counties, and extend on the western side of England, into Lancashire, and on the eastern side, into Yorkshire. Rock salt has hitherto only been found in Cheshire and Worcestershire, but numerous saline springs, in different parts of the new red sandstone formation, indicate the presence of this mineral. The upper bed of rock salt, in Cheshire, was discovered, about 150 years since, in searching for coal: it is about 40 yards below the surface, and 26 yards thick, and is separated from a lower bed of salt by a stratum of argillaceous stone, 10 yards thick. The lower bed has been sunk into 40 yards. At Norwich, the rock salt extends in a direction from north-east to south-west, 1½ mile; its farther extent in that direction is not ascertained. The breadth is about 1,400 yards. In another part of Cheshire there are 3 beds of rock salt, the lower of which has been sunk into 25 yards, but has not been cut through.

The rock salt of Cheshire is sometimes coloured red, by an admixture with a small portion of oxide of iron; the colourless, transparent specimens are nearly pure salt, with scarcely any water of crystallisation. There are also numerous salt springs in Cheshire, containing 25 per cent. of salt.

At Droitwich, in Worcestershire, the existence of rock salt has been proved by boring; but all the salt is procured by evaporating the water, which is nearly saturated with it.

Lias limestone and clay may be traced at the feet of the Cotswold Hills, and along the whole range, from Lyme, in Dorsetshire, to Whitby, in Yorkshire. It rarely attains an elevation of 200 feet. It consists chiefly of dark argillaceous limestone, which contains iron, and forms, when bound, a good water-setting lime. The most conspicuous section of the lias beds may be seen at Lyme, forming cliffs on the coast, remarkable for the abundance of fossil organic remains, particularly of large saurian animals partaking of the structure of the fish and the crocodile, having paddles in the place of fins or feet; hence called the ichthyosaurus. Some of these animals were of enormous length,—other species are remarkable for the extraordinary length of the neck, which is composed of 30 vertebræ.

In the lias cliffs, near Whitby, the remains of saurian animals are less frequently found; but the lias clay there assumes a slaty form, and is much impregnated with bitumen and sulphuret of iron, forming alum slate, or shale. This slate, or shale, is piled in heaps, with small layers of brushwood: when ignited, a slow combustion is continued for several weeks, by the bitumen and sulphur in the shale, during which process the sulphur forms sulphuric acid, and combines with the alumine in the shale. The saline residue is dissolved in water, and a small portion of potash is added to the solution, to enable the alum to crystallise on evaporation. The alum works at Whitby supply the greater part of the alum of commerce in England.

In some parts, the lower thin strata of lias are of a yellowish white colour, and a compact texture, and are suitable for lithography.

If we refer to the waving line before mentioned, from Exmouth to Stockton-on-Tees, we find the escarpments of the beds of oolite ranging near that line, which forms their termination in that direction, no beds of a similar rock being found on the north of that line, in any part of England.* South and south-east of that line, the whole country is composed of the upper calcareous formations of oolite and chalk, intermixed with beds of sand, sandstone, and clay. This part of England is destitute of any valuable metallic or mineral repositories. Some of the oolite beds furnish useful building-stone; fuller's earth and pipe-clay may also be enumerated among its mineral products. In the eastern moorlands of Yorkshire, a few beds of imperfect coal are worked, for the purpose of burning lime. The oolite limestone is so called, because many of the beds contain numerous round globules disseminated through them, resembling in size and form the roe of fishes: whether these globules are of animal origin, or are produced by concretionary arrangement, geologists are not yet agreed. Oolite limestone has generally a yellowish colour, and an earthy texture.

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* The lias on which the oolite beds rest, is considered by some geologists as the lowest part of the oolite group; an isolated extent of lias beds has very recently been discovered in Shropshire, north-west of this line.

Beds of oolite limestone, with associated beds of clay, cover the southern part of Gloucestershire, and a great part of Oxfordshire, Northamptonshire, Rutlandshire, and the eastern side of Lincolnshire; whence they range along the west side of the Yorkshire Wolds, and terminate in the Cleveland Hills. A bed of clay, called clunch clay and Oxford clay, separates the lower oolites from the middle oolites; it is in some parts 200 feet thick. This clay covers a considerable part of the lowland in Huntingdonshire, Bedfordshire, and Oxfordshire, and may be traced southward into Wiltshire. Between the middle and the upper oolite there is a bed of bituminous clay, which is called Kimmeridge clay, being so bituminous as to be used for fuel near Kimmeridge, in the Isle of Purbeck. The upper oolite rests on the Kimmeridge clay, in the Isle of Portland, where it is extensively quarried for building-stone. St. Paul's Cathedral, in London, and most of the churches and public buildings, in London, of nearly the same date, are built of Portland stone: it is easily worked, and is very durable. The total thickness of the different beds of the oolite formation, comprising the beds of clay, has been estimated at from 1,500 to 2,000 feet, to which, if we add 500 feet for the lias, we shall have between 2,000 and 3,000 feet of strata, that have evidently been deposited in an ancient ocean of vast depth, as the numerous shells, and other animal remains, distributed in every part of this series of strata, are those of marine animals, with one remarkable exception. The shells include various genera and species of bivalves and univalves; there are numerous fossil remains of coralline animals and sponges in one of the beds, hence denominated the coral rag. Bones and teeth of enormous animals, allied to the crocodile, are found both in lias and the oolites; and the remains of one species of these animals which had wings, have been discovered near Lyme, and also at Stonesfield, in Oxfordshire.

The animal remains in the oolite and lias, prove that the beds were deposited in an ancient sea; but fragments of wood, and bones of fresh-water animals are occasionally found in the same beds, which indicate that there was dry land in the vicinity, and rivers, by which the fragments and bones had been transported into the sea.

At Stonesfield, in Oxfordshire, the bones and teeth of a small species of didelphis (opossum) have been found in calcareous sandstone of the oolite formation, which is the only instance, at present known, of the remains of any of the terrestrial mammalia being found in the secondary strata, whether above or below the oolite beds.

In the eastern moorlands of Yorkshire, there is an imperfect coal formation among the oolite beds, containing remains of terrestrial plants; and in one situation, the fossil stems of a gigantic equisetum are found in an erect position, indicating that they are in the place in which they originally grew. This imperfect coal formation was probably deposited in a freshwater lake, that was occasionally dry.

Over the oolites, occur beds of green and ferruginous sand, covered by thick beds of chalk: all these beds contain exclusively remains of marine animals, but in the wealds of Sussex and Kent, the chalk and green sand do not rest upon the oolites, but on beds of clay and sandstone, about 1,200 feet thick, which contain the remains of terrestrial plants and freshwater animals. The chalk beds have been removed from the valley of the weald, by causes perhaps not easily to be explained. The whole of the weald is composed of the freshwater beds, which pass under the surrounding chalk hills of the North and South Downs. The freshwater beds have received the name of the wealden beds; they extend from Hastings' into Dorsetshire, but are not found north of the Thames. The wealden is a local formation, and appears to have been deposited in the bed, or delta, of a river of vast breadth, for the supply of which a large extent of country would be required. This country must afterwards have been submerged to a great depth under the ocean, and covered with the chalk strata and green sand about 2,000 feet in thickness: at a subsequent period, the chalk and subjacent strata were elevated, to form the present land of the south-eastern counties. However difficult it may be to explain the causes of the repeated oscillations of the earth's surface, by which the land was alternately submerged under the ocean, and upheaved above its waves, the proofs of such alternations are too manifest to be denied, at least by those who have carefully examined the geology of this district.*

The green and ferruginous sand under the chalk, and a bed of dark clay called gault, which separates them, contain analogous marine fossils, and are regarded as members of the chalk formation; they do not cover a great extent of surface in England, but are to be traced along the feet of the range of chalk hills, cropping out beneath the chalk. The northern termination of the chalk range runs from near Dorsetshire in a north-east direction, through Wiltshire, Berkshire, Buckinghamshire, Hertfordshire, and Cambridgeshire. Chalk is continued into Suffolk and Norfolk, and thence along the wolds of Lincolnshire and Yorkshire, where it terminates near Flamborough Head. The whole of the eastern side of England, south of this range, has a substratum of chalk, except in the wealds of Sussex and Kent, where the chalk appears to have been removed, as we have before stated. In some parts, the chalk is covered by tertiary beds of clay and sand, which will be afterwards noticed. The average thickness of the chalk beds, where fully developed, may be stated at about 1,000 feet; the lower beds contain few flints, the upper beds contain numerous nodules and irregular layers of flint. Many of the animal remains are extremely delicate, but are in high preservation, which proves that chalk was deposited in a tranquil sea. Vegetable remains are extremely rare in chalk, and fragments or pebbles of any other rock rarely occur, except in the lowest beds, which are sometimes intermixed with the green sand on which the chalk rests.

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* A very valuable work on the geology of the south-east of England, has recently been published by Gideon Mantell, Esq. F.R.S., of Lewes, to whom we are indebted for the discovery of the fossil remains of two of the largest and most extraordinary animals, of the saurian genus, hitherto known. The one called the iguanodon, an herbivorous reptile, 70 feet in length; the other, called the hylæosaurus. The remains were found in the gritstone of the wealden beds, in Tilgate Forest.

Before terminating the account of the secondary strata, it may be proper to observe, that the marine organic remains are not identical with species existing in the present seas, but many of them are allied to genera that inhabit the seas of tropical climates. The new red sandstone and lias rarely attain any considerable elevation. The oolite range, in some parts of the Cotswold Hills, and the Hambleton Hills, in Yorkshire, rises to a height of about 1,100 and 1,000 feet. Crowborough Beacon, the highest part of the wealden beds, is 804 feet. Leith Hill, Surrey, composed of green sand, is 993 feet; and Ink Pen Beacon, Hampshire, the highest part of the chalk range, is 1,011 feet.

The secondary strata we have been describing, generally dip gently towards the south-east, and rise towards the north-west, so that a traveller leaving the northern escarpment of chalk in Berkshire, and proceeding to the Malvern Hills, in Worcestershire, would pass in succession over the edges of all the secondary strata, from the chalk to the red sandstone, in the vale of Severn. The true character of the different strata is in many parts concealed by vegetable soil and cultivated fields, but may be discovered where the surface is broken, or where recent intersections have been made in forming roads or cutting canals.

Tertiary Strata.—The name of tertiary has been given to all the beds that have been deposited subsequently to the chalk strata; in many situations they cover chalk. The organic remains, both animal and vegetable, in the tertiary strata, differ much from those found in the secondary strata, and resemble or approach nearer to existing species, particularly in the upper or most recent beds. The bones of large mammiferous animals are found also in some of the tertiary strata, but have not hitherto been discovered in the secondary. In England, the tertiary beds occur only in the south-eastern counties, and present but little variety.

The London clay, and plastic clay, cover the vale of Thames, from Newbury, in Berkshire, to the mouth of the Thames, and extend through Essex to Harwich. The London clay, and plastic clay, may be regarded as one formation of sand and clay, varying in different parts; the lower, or what is improperly called the plastic clay, consists chiefly of different beds of sand, in which are a few beds of clay. The London clay consists chiefly of one thick bed of dark clay; the upper part is generally of a reddish brown colour, and is more arenaceous than the lower beds. The total thickness of the beds that cover the chalk near London, varies from 200 to 300 feet. It has been frequently sunk through, in the search for good water, which can rarely be obtained above the chalk, as the clay beds contain sulphuret of iron and sulphate of magnesia.

Several beds of this clay are used as brick-earth. In the lower sands, near Reading, are numerous oyster-shells, and the general character of the bivalve and univalve shells, in this formation, is marine; but the remains of some freshwater animals also occur in it, and the heads of small crocodiles have been found in the London clay. Fossil wood, pierced by an animal resembling the teredo, is very common, but the most remarkable vegetable remains are those of fruit or ligneous seed-vessels, which are abundant in this formation, in the Isle of Sheppey. The vegetable remains, and those of freshwater animals, indicate that the London clay and sand were deposited in a bay or estuary, into which rivers of fresh water transported the productions of a neighbouring country. Beds of plastic and London clay extend along the southern side of Hampshire, and into the Isle of Wight, and on the coast, from Southampton river to Brighton. The London and plastic clay of the Thames has been called the London Basin, and that of Hampshire has been called the basin of the Isle of Wight. It was at first supposed that the strata were deposited in distant bays or seas; but there are patches of similar strata upon several intervening chalk hills. It is therefore probable that the two basins were once united, but have been separated by the upheaving of the chalk hills, of which evident indications are afforded; for instance, in the Isle of Wight, the beds of chalk that range through the middle of the island, are thrown into a vertical position, of which sections are distinctly displayed, at Alum Bay on the west, and White Cliff Bay on the east. The London and plastic clay, which in other situations are nearly horizontal, have here been upheaved with the chalk, and present numerous beds of sand and clay, standing nearly erect, which could never have been their original position. The total thickness of the upheaved beds is about 3,000 feet. This disruption and elevation of the strata may be traced westward into Dorsetshire, and was evidently posterior to the deposition of the London and plastic clay, for these beds are upheaved with the chalk. In the Isle of Wight, there is a calcareous tertiary formation, which has hitherto been discovered in no part of England, consisting of beds of sand and limestone, with freshwater shells: in some parts it is sufficiently hard to make good building-stone. The upper freshwater limestone is principally a calcareous marle, containing numerous well-preserved shells of the planorbis and lymneus. The freshwater beds, above the London clay, are on the northern side of the island; they appear to have been deposited in an extensive freshwater lake, when the surface of the land was very different from what it is at present.

In some of the southern counties, occasional beds of siliceous sand occur, over the London clay and chalk, which are supposed to be analogous to the upper marine sand of the Paris Basin. This is sometimes called the Bagshot sand, from its occurrence in a considerable mass at Bagshot, in Surrey.

There only remains one other tertiary formation to be described, which occupies the eastern side of Norfolk and Suffolk, and is provincially called the Crag. It consists of ferruginous sand and clay, intermixed with masses of chalk and London clay. The beds are irregular and much contorted, and contain numerous marine shells, with fossil sponges and alcyonites; the organic remains, for the most part, resemble species existing in the present seas. The sand of the Crag is sometimes indurated into sandstone. Below the Crag is a thin stratum of gravel, resting on chalk; this stratum contains trunks and branches of trees, compressed by the weight of the superincumbent strata, and also leaves and seed vessels, with bones, teeth, and tusks of the elephant, and horns, bones, and teeth of the ox and deer. This stratum stretches into the sea. Off Harborough the fishermen have dragged up many hundred specimens of the molar teeth of elephants.—(*Woodward's Outline of the Geology of Norfolk.*)

In the cliffs of Sussex, near Brighton, there is a stratum composed of sand, intermixed with nodules of flint and masses of chalk, which bears close resemblance to the Norfolk Crag: in this stratum the bones and teeth of the horse and ox, and the tusks and teeth of the elephant, have been found; it has hence been denominated, by Mr. Mantell, the Elephant Bed.

The alluvial and diluvial depositions scattered over various parts of England, consist of beds of clay, sand, and gravel, and loose blocks and fragments of rock, often of considerable size: they are too numerous to admit of a detailed description in the present outline. Alluvial depositions are now forming in the banks and at the mouths of the rivers, and in valleys, but the beds of gravel and scattered blocks of stone have been carried from distant districts, by causes which we no longer see in operation. Fragments of the rocks of Cumberland and Wales are scattered over many of the midland counties, and beds of flint gravel occur at a considerable distance from the chalk districts, not only in the valleys but on the summits of hills, proving the transporting power of a mighty rush of waters, that has swept over the earth's surface; and indicating also, that in some instances a considerable change has taken place in the relative elevation of different parts of the country, since these blocks of sand and beds of gravel were deposited in their present situations. In many beds of clay and gravel, as well as in the floors of caverns, the bones and teeth of the elephant and other large animals are found, of which the species are at present extinct in Europe. The hyena and the great cavern bear have chiefly left their remains in caverns; the bones and teeth of elephants are generally found in valleys. There can be little doubt that all these animals were once natives of this country. The phenomena presented by transported blocks of stone and beds of gravel, offer to the mind of the geologist subjects for profound meditation, though they only afford us proofs of one of the latest revolutions that have changed the surface of the globe in northern latitudes.

The mineral and thermal waters of England and Wales present nothing peculiarly deserving of notice. The thermal waters of Bath were known to the Romans, and we have no evidence that they have decreased in temperature for 2,000 years. The hot wells at Bristol, like those of Toplitz, in Bohemia, and Moutiers, in the Tarentaise, were affected by the earthquake of Lisbon, in 1755; they were coloured red, and rendered unfit for use several months afterwards. The temperature of the Bath waters is 117° and 112° Fahrenheit; those of Bristol are 74°, Buxton 82°, and Matlock 65°. Warm springs rise in many parts of the Peak of Derbyshire, but the temperature is reduced by admixture with cold springs near the surface. No thermal springs are known in England, except in Derbyshire and Somersetshire.

Sect. 8. *Climate.*

The *climate* of a country means all the modifications of the air, by which the organs of man and of the lower animals are affected. These modifications are referable chiefly to grades and vicissitudes of temperature; to clearness and serenity; to degrees of humidity; to variations of pressure, and of electrical states; to the admixture of various foreign gases; to the more subtile emanations dissolved in the atmospheric moisture; and to tranquillity and motion as respects horizontal and vertical currents. These diversified conditions depend upon the distance from the equator; upon the soil; upon adjoining seas, lakes, and rivers; and upon the physical circumstances of adjoining regions; and they exert a most powerful influence over the developement and health of vegetable and animal structures — upon the sensations, the intellectual powers, and the moral constitution of man.

England enjoys a climate resulting from several associated circumstances: 1st, from its distance from the equator; 2d, from its geographical position and relations; 3d, from the prevailing winds or currents of air passing over it; 4th, from its geology, soil, cultivation, and vegetation; and, 5th, from elevation above, and proximity to, the sea. Each of these exerts a remarkable influence on the climate of the country; but there are numerous phenomena connected with them, which are as yet either altogether unknown as respects some situations, or imperfectly ascertained as regards others. England is placed nearly in the centre of the temperate zone, and consequently where the range of temperature is considerable, although very much less than in the same latitude in either of the great continents. It is influenced by the warmth of the Atlantic Ocean on the south and west; by the cold proceeding from immense fields of ice, on the north; by the vapour exhaled from the Atlantic, on the one side, and by the comparatively dry air of the continent of Europe, on the other. These affect the temperature, humidity, and currents of its atmosphere. The *temperature* varies with the declination of the sun, and the direction of the winds, the latter depending much upon the former. As the sun passes to the northward of the equator, and warms the surface of countries near the northern tropic and the Atlantic, the prevailing current of air is from the north; the air cooled in the icy regions moving southwards, and replacing that elevated into the higher regions from the surfaces heated by the shifted position of the sun. Hence northerly winds prevail in spring and summer, and depress the temperature very considerably in these seasons; these winds exceeding the southerly, upon an average of 10 years, in the proportion of 192 to 173, according to Mr. Daniell. Owing to the great cold of the European continent, during spring, and the comparative warmth of the Atlantic, heightened both by the northern declination of the sun, and by the flow of the intertropical Atlantic waters into the northern and polar seas, an atmospheric current is established from east to west, the air cooled by the continent replacing that which rises warm from the surface of the Atlantic. Thus easterly winds prevail in March, April, and May; and a combination of the two foregoing circumstances generally occasions the winds to blow most frequently from points intermediate between north and east, during the months of spring and summer.

The temperature of the inland countries of Europe being raised in summer and autumn, the air, loaded with exhalations from the ocean, rushes to replace the strata which are constantly rising from the heated surfaces of these countries; and westerly winds consequently prevail during these seasons. Towards the end of autumn, the continent of Europe, especially its northern parts, having quickly cooled much below the temperature of the adjoining ocean, northerly and easterly winds again appear, and predominate in the months of November and December.

Thus the altered position of the sun, the frigorific effect of the northern regions, the high and equable temperature of the Atlantic ocean, and the temperature of the European continent varying with the seasons, combine to give certain directions to the atmospheric currents passing over the British Islands. These currents, however, are not always manifested by the state of the winds; for, as more even than two currents may be established in the air at the same time, and as there are numerous causes of divarication, — some local, and others consisting of contingent or occasional phenomena — so it follows that the lowest of these currents, constituting the winds, may often vary remarkably from, or even be quite opposed to, the more important current established in the next super-imposed stratum of the great atmospheric ocean. Hence the wind in valleys, or near the bases of mountains, is often in a different, or even opposite, quarter from that at elevated positions, or at their summits.

The same circumstances which combine to give direction to the winds also occasion the remarkable vicissitudes of atmospheric heat and humidity in this country. The winds from the north convey to it, at all seasons, the frigorific influence of the polar regions, somewhat tempered, however, by the warmer ocean placed between them and our shores. As these winds veer towards the west, and as a more extensive surface of the warmer Atlantic and northern oceans is swept by them, their temperature is proportionally elevated, and their humidity increased; but, as they change towards the east, especially in winter and spring, their temperature is equally lowered, and their humidity diminished, owing to the immense extent of frozen and dry country over which they pass, and the very limited extent of ocean between the east coast of England and the west coast of continental Europe; and they consequently reach the former but little tempered from the state in which they left the north-eastern regions of the latter; the winds blowing from this quarter being the coldest that pass over the British Isles.

The warmth and softness of the south, south-west, and west winds are caused by the temperature of the extensive ocean from which they proceed; and which, even in the latitude of Great Britain, retains a mean heat much above that of the incumbent atmosphere, and still more above that of the land. During winter and spring the difference between the temperature of the ocean and of the earth's surface, in this latitude, is very great, and is heightened, at these seasons, as well as in others, by the flow of the inter-tropical waters from the south-west to the north-east; the edge of this great current sweeping along the shores of Ireland, and slightly influencing the Irish Channel, so as to constitute what is known to navigators by the name of the inset of this channel; and thereby tempering the climate of that island, as well as that of the southern and western sides of Great Britain.

It must be evident that the physical circumstances already adduced explain not only the prevalence of certain winds, and the variations of temperature observed to follow every change in the atmospheric current, but also, in a great measure, the comparative dryness and humidity of the air, and the deposition of the exhaled moisture in the states of snow, rain, fog, and dew. The quantity of moisture which the air will retain, without affecting its transparency, varies very remarkably with its temperature. Sir John Leslie ascertained, that air, at the freezing point, is capable of holding a portion of moisture equal to 160th part of its own weight; at the temperature of 59°, the 80th part; at that of 86°, the 40th part; at 113°, the 20th part; and at that of 140°, the 10th part; so that the air has its dryness doubled at each rise of temperature answering to 27° of Fahrenheit. While the temperature, therefore, advances uniformly in arithmetical progression, the dissolving power which this communicates to the air mounts with the accelerating rapidity of a geometrical series. It follows, that when the air, at any given temperature, is saturated with moisture, a depression of temperature will make it yield a portion of such moisture proportioned to the depression; the moisture thus parted with assuming various forms, according to the elevation at which the separation takes place, and the rapidity with which the change of temperature occurs.

From the above it follows, that the amount of evaporation, or, more correctly, the quantity of moisture which the air will retain without affecting its transparency, must depend chiefly upon its temperature. Mr. Howard and Mr. Daniell have endeavoured to ascertain this in respect of the vicinity of London, and the results of their inquiries very closely accord. The average annual amount of evaporation, according to Mr. Daniell, is 23·974 inches, and the rate at which it proceeds during the several months of the year is estimated by him as follows: —

	Inches.		Inches.
January	0·413	July	3·293
February	0·733	August	3·327
March	1·488	September	2·620
April	2·290	October	1·488
May	3·286	November	0·770
June	3·760	December	0·516

Thus the average monthly amount of evaporation increases and diminishes with the temperature. The average annual amount of rain that falls in the neighbourhood of London is, according to

Mr. Daniell, very nearly the same as the annual amount of evaporation, or 23$\frac{1}{16}$ inches; the several months contributing the following proportions: —

	Inches.		Inches.
January	1·483	July	2·516
February	0·746	August	1·453
March	1·440	September	2·193
April	1·786	October	2.073
May	1·853	November	2·400
June	1·830	December	2·426

When we observe the immense oceanic surface to the west and south-west of the British Isles, the humidity of the winds blowing from these directions must be anticipated; and when we remark the extensive continent to the east, and its comparative dryness in spring and summer, and more especially in winter, when the earth's surface, with its rivers and lakes, is congealed into an icy crust, and the moisture of the air is precipitated in the states of hail, snow, or hoar-frost, the dryness of the east winds must be equally obvious. The moist and warm winds from the former directions deposit their moisture in the form of rain, when changes of temperature and electrical conditions diminish the solvent property of the atmosphere, particularly when the temperature of the land sinks below that of the adjoining ocean, and when the air is thereby cooled as it passes to the east. Hence the principal part of the rain in England is from the west, about two-thirds of the whole quantity falling on the west side of the kingdom. During spring, when north-east winds prevail, in consequence of the change in the sun's declination, and the much greater warmth of the Atlantic Ocean, the dryness of the air, owing to the circumstances stated above, is often remarkable; and when these winds begin to blow, they generally precipitate, by their great coldness, the moisture as it rises from the warmer surface of the earth, or surrounding waters and lakes, in the form of fogs or mists; and are often the cause of the catarrhal, bronchial, pulmonary, rheumatic, and aguish affections prevalent at this season, more especially when they pass over low, humid, and marshy grounds, as in various parts of Essex, Cambridgeshire, &c.

During summer and autumn, westerly winds are most prevalent. The air from the Atlantic Ocean rushes to replace the strata constantly rising from the heated surface of the inland countries of Europe, and deposits the moisture with which it is loaded, in the form of rain, as it passes over the nearest land; the mountains, hills, and places in their vicinity, which first attract the clouds formed by the exhaled moisture, experiencing the greatest fall. Still the air does not thus lose all its moisture, but only that part which the change produced by the terrestrial radiation in its temperature and electricities, renders it incapable of holding in solution; and the atmospheric current, in its course eastward, often parts with other portions, until it has its solvent properties again increased, by the greater heat of the European continent in these seasons; and the rains are replaced by nightly falls of dew, as the nocturnal cooling of the earth's surface lowers the temperature, and also the solvent powers, of the adjoining stratum of air.

When, however, the southern declination of the sun at the end of autumn reduces more permanently the temperature of the earth's surface, the air, being consequently cooled, precipitates a large portion of its moisture; and, at the same time, its lower stratum rushes westward, to replace the stratum elevated into its higher regions from the now warmer surface of the Atlantic; whilst this latter stratum, in the higher regions, rushes eastwards, and, as it cools, replaces that which is attracted westward by the cause now assigned; a circulation of the atmosphere from east to west in the lower, and from west to east in the upper stratum, being thus established. It is chiefly owing to this circumstance that falls of rain often take place from the east during the latter part of autumn and commencement of winter: the moisture which, in spring and summer, had passed over this country, either dissolved in the air, or suspended in the form of clouds, and been conveyed to the dry and comparatively warm atmosphere of continental Europe, returning again over Great Britain, and giving rise to prolonged rains or fogs, as the currents and solvent powers of the air change with the varying position of the sun, and with the different degrees of temperature of the earth's surface and of the ocean, at the same latitude. A large portion, also, of the rain which falls when the winds blow from easterly quarters, is owing to the circulation of the warm and moist air from the surface of the ocean into the higher regions, and thence eastwards, where it passes into the lower regions as it cools, and replaces that which flows westwards and afterwards rises from the warmer surface of the ocean; the moisture thus exhaled from the Atlantic not being altogether deposited in the form of rain or snow until it has nearly gone the circuit now pointed out.

It is seldom that a considerable fall of rain takes place with the winds at north-east or east, particularly during winter and spring, unless they veer towards the north or south, or unless the clouds formed by the moisture exhaled from the ocean move in the higher regions of the air in a westerly direction, and, as they become further cooled by the land, either change their course, in the manner just stated, or impart their moisture to the lowest stratum of air circulating in an opposite or different direction. Thus, we generally perceive that rain from the east, or, rather, with the wind at east, is preceded by large clouds or haziness of the air, rising from some quarter connected with the west; and that, although the wind may still continue to blow from the east, these clouds extend, rise out of the western horizon, and move rapidly to the east, until the atmosphere becomes thick in all directions; the clouds supplying the falls of rain from the east actually coming from the west, and depositing their moisture in the course of that circulation explained in the preceding paragraph. Those who have been led by their occupations to note the changes of the atmosphere never expect the cessation of rain from the east until the western hemisphere becomes clear, or the clouds cease to rise from that quarter; nor trust to any continuance of dry weather, if heavy clouds rise and move in a different direction from that in which the wind is blowing at the time.

The other physical circumstances enumerated above, as influencing the climate of England, are altogether such as exert, upon the whole, a favourable effect. The *elevation* of particular districts is nowhere so great as very remarkably to affect the temperature, or dryness of the air. The range of hills extending southwards from Cumberland and Westmoreland tends, however, to increase the quantity of rain which falls in their vicinity, or in places situated near their bases; and a similar effect is produced by the Welsh mountains. But the geographical and other physical circumstances of the west side of the island would cause a greater fall of rain to take place on it than on the east side, though no such ranges of hills existed. The extent, however, to which they may operate in producing this result, will appear more fully in the sequel; but more influence seems to have been imputed to them than they really exert.

Proximity to the sea has a very marked effect upon the climate of England, but chiefly in the way already shown. This is felt throughout the kingdom, but principally near the coast, and more especially on the south-west coast; the daily, monthly, and yearly ranges of the thermometer being, through the vast extent of the circumjacent ocean, very much limited; while the humidity of the air is at the same time increased. The tempering effects of the sea on the east side of Great Britain are very much less than on the west. The sea off the former is cooled in winter and spring by the waters of the Germanic rivers, which are poured into it at a temperature little short of the freezing point; whilst that off the latter is influenced by the constant flow of the Atlantic towards the polar seas, as stated above. The temperature of the waters of the Irish channel, even in January, seldom falls below 50° Fahrenheit; and that of the Atlantic, in the same latitude, is very considerably above this; whilst the German Ocean, in the same season, is several degrees below 50°: it seldom, indeed, rises above 45°, excepting in July, August, and September.

The *geology* of England exerts, on the whole, but little influence upon the climate, excepting in as far as it contributes to form the soil and to determine cultivation; and it is nowhere such as can injuriously affect the atmosphere. The face of the country, with few exceptions, is sufficiently undulating to facilitate the percolation of superabundant moisture, and to favour its flow into adjoining rivers; and it is only in certain limited tracts, on the east side of the kingdom, where the soil is deep, absorbent, or marshy, as in parts of Cambridge, Lincoln, Suffolk, Huntingdon, Norfolk, and Essex, and in a few places in Kent and Sussex, that the moisture is retained until it is altogether evaporated into the air, carrying with it a portion of decayed vegetable or animal matters, or the gases formed by their decomposition.

The *cultivation* of the country has either wholly removed or materially diminished most causes of insalubrity, and increased the favourable influence of the circumstances already specified upon the climate. The temperature of some countries is much reduced, the humidity of the air increased, and the sources of disease multiplied, by extensive forests and the neglect of tillage; but such is not the case in England. Our woods are neither large nor thick enough to have any pernicious influence; and our improved system of agriculture has helped to counteract the physical causes that render the atmosphere more moist than in continental countries. In some parts, particularly in the eastern counties, large marshy districts have been drained and cultivated, and rendered drier and warmer, as well as more salubrious, than formerly. In a few places, however, where canals have been multiplied, and extended through tracts where they could not, from their level and other circumstances, drain off superabundant moisture, the climate has been deteriorated. But, while railroads form so rapid and so attractive a means of public conveyance, canals are not likely to be much further multiplied; and, after all, their injurious influence upon the climate is, even at present, but little felt, and limited to a few places only.

The *general results* of the circumstances reviewed above, upon the climate of England, are — (*a*) the moderation of extremes of temperature; — (*b*), a humid state of atmosphere, more remarkable, however, near the sea coast than in the more inland parts, and on the south-west and west sides than on the east; — (*c*), an uncertain and changeable state of the seasons; — (*d*), very frequent vicissitudes of atmospheric temperature and humidity, owing chiefly to changes of the winds; — (*e*), a limited range of these vicissitudes, even when they are most frequent; — and (*f*), a more equable and milder climate, although more humid and more changeable, within certain limits, than that of any other country placed at the same distance from the equator. Certain of these results require illustration.

a. The temperature is so moderated in its extreme ranges, that it seldom falls much below the freezing point, even in the month of January, the coldest month, — very rarely so low as 18° or 20°, and hardly ever to either of these degrees, excepting in the more inland counties, and on the east side of the kingdom; or rises above 78° or 80°, or even so high, unless in the south-east and inland places, in the warmest months of July and August. In the northern parts of the kingdom, owing to their nearer proximity to the ocean, the extremes of temperature are still more contracted, the thermometer seldom falling to, and very rarely lower than, the limits now specified; and hardly ever rising above 75°. So that, upon the whole (excepting where difference of elevation above the level of the sea makes a slight variation), the mean annual temperature of the northern parts of the country is only between 2° and 3° lower than that of the south-eastern counties; the more moderate heat of summer and autumn, in the former, being compensated in part by a less extreme or permanent degree of cold in winter than is occasioned in the latter by proximity to the Continent; and the greater distance of the northern counties from the equator being, in some measure, counteracted by the tempering influence of the ocean. The difference, however, between the annual temperature of the northern and the south-western and inland counties is much greater than that between the northern and south-eastern; owing to the more distant removal of the south-western counties from the continent of Europe, and their nearer proximity to the equator. In the midland counties (and especially in the more southerly of these), the heating effects of extensive tracts of cultivated land, in summer and autumn, are more manifestly experienced, and the cooling influence of the ocean much less, than in the northern; whilst the warmth of the Atlantic, in winter and spring, is more felt than the cooling influence of the Continent, which, at these seasons, affects chiefly the eastern parts of the kingdom. It is in spring that the greatest difference of temperature, between the northern and southern counties of England, is evinced; for the former experience the frigorific influence of the icy and northern regions much longer; and the latter feel the effects propagated by the atmosphere and adjoining ocean, from southern and warmer regions, not only much earlier, but also to a greater degree, than the more northern districts, exclusive of the nearer approach of the sun by two or three degrees.

In estimating the mean temperature of England, it will be convenient to consider the subject with reference to the different parts of the kingdom, which several physical circumstances more or less distinguish. 1st. The *south-east part* consists of the country east of the longitude of London, terminating with Norfolk on the north, and with Kent on the south. 2d. The *south district* consists of Surrey. Wiltshire, Sussex, Hampshire, including the Isle of Wight. 3d. The *south-west* comprises Dorsetshire, Somersetshire, Devonshire, and Cornwall. 4th. The *west* embraces Wales, and parts to the northward on that side. 5th. The *north* takes in all to the northward of the fifty-third degree of latitude: and, 6th. The *inland distrct* consists of the remainder. Although *London* should be placed in the south-eastern district, there are several circumstances which combine to give it a somewhat peculiar climate, and a higher mean temperature, than is observed in its immediate vicinity. These are,—its position near the level of the sea; the high cultivation of the adjoining country; the influence of innumerable fires and gas-lights; and the partial shelter, furnished by the high grounds to the northward, from the winds in that quarter. The ground, also, is so completely covered by buildings and pavements, and is so drained by sewers, &c., that little cold is generated during the nights by the evaporation of moisture, which can be given out but to a limited and much less extent than from a soil covered by vegetable productions: the only countervailing circumstances are the low, open, and marshy district to the eastward, and near the mouth and banks of the Thames, which admits of unbroken currents of air from the east, and the practice of watering the macadamized and muddy streets. These affect, in some degree, the climate of London, and increase aguish and similar disorders.

1. In *London*, the mean temperature of the *whole year* is 50·39; of *winter*, 39·12; of *spring*, 48·76; of *summer*, 62·32; and of *autumn*, 51·35; that of *January* being 37·36; and of *July* and *August*, 63·50 each.

2. In the *south-eastern counties*, the mean temperature of the whole year may be estimated at 48·81; of *winter*, 37·20; of *spring*, 48·10; of *summer*, 60·80; and of *autumn*, 49·30; that of *January* being 34·16; and of *July*, 62·40.

3. In the *southern district*, the mean temperature of *the year* is 51·10; of *winter*, 40·35; of *spring*, 49·00; of *summer*, 63·10; and of *autumn*, 51·65; that of *January* being 38·35; and of *July*, 65·00.

4. In the *northern counties*, the mean temperature of *the year* is about 47·65; of *winter*, 37·50; of *spring*, 44·50; of *summer*, 59·50; and of *autumn*, 48·65; that of *January* being 36·10; and of *July*, 60·50.

5. In the *south-west* extremity of the kingdom, or peninsula formed by the English and Bristol channels, the mean temperature of *the year* is about 52·50; of *winter*, 44·50; of *spring*, 49·60; of *summer*, 60·50; and of *autumn*, 53·80; that of *January* being 42·50; and of *July*, 63·50.

6. In the *midland counties*, the mean temperature of *the year* is 51·30; of *winter*, 40·60; of *spring*, 50·20; of *summer*, 64·30; and of *autumn*, 51·00: that of *January* being 38·20; and *July*, 66·30.

The influence of the geographical position of England upon its temperature is well shown by comparing the thermometric ranges observed in it and in continental places in the same latitude. At *Moscow*, which is in the same latitude as the north of England, the mean temperature of the year is only 40°, whilst that of the hottest month is 70·50.

b. Humidity of the atmosphere is a necessary result of the circumstances already mentioned: but the air is not equally moist in all parts of the kingdom, or at all seasons.

The *seasons*, as already seen, vary in this respect very remarkably; but the months of February, Mareh, January, and April may be considered the driest; and summer, autumn, and the early part of winter, the most humid. In respect of *situation*, the south-west and western parts of England are much more moist than the east, south, and inland counties; and the quantity of rain which falls in them much greater. On the south-east coast, and in the vicinity of London, the annual quantity of rain varies from 20 to 25 inches; whilst in the western parts it ranges from 30 to 51 inches, according to the locality; the more westerly places, and those situated near the bases of the most westerly hills, experiencing the greatest falls. In many situations, also, on the west side of the island, foggy and drizzling days are very common, the quantity of rain or moisture then deposited being insufficient to affect the rain-gauge. In Cornwall, the annual quantity of rain is about 45 inches; and the average number of rainy days, according to Mr. Giddy's register, about 180,—a number not materially above that observed in the vicinity of London; the difference being in the quantity and continuance of the fall, rather than the frequency of the occasions. But, even when there is no fall of rain, the air is more constantly humid in the western parts, especially near the coast, than in others. This is shown by the hygrometer, and the readiness with which articles of iron and steel rust when exposed even in the driest weather; and is a necessary consequence of the physical circumstances already explained.

The inland, south, and south-east counties possess, upon the whole, the driest air. Of the inland district, those parts which are most elevated, and situated to the eastward of the Welch mountains, and of the range of high hills running southwards from Cumberland and Wesmoreland, are amongst the driest. Yet many inland places experience much rain, owing chiefly to there being no high hills or mountains interposed between them and the ocean, and to hills in their immediate vicinity, which attract or otherwise affect the clouds, and assist in condensing the atmospheric moisture. In some such places, there is more rain than in parts situated nearer to the western coast; thus there is a greater fall of rain at Manchester than at Liverpool; and, as moisture is generally precipitated to the lower regions of the atmosphere before it is condensed or aggregated into rain-drops, it follows that a larger quantity falls at the bases of high hills or mountains than on their summits.

c. The variability and uncertainty of the climate of England have been considered, but with insufficient reason, its greatest disadvantages. They necessarily result from the circumstances already explained; and have been unwarrantably assumed as injurious to the human frame. They have, also, been inconsiderately magnified; effects have been imputed to them, which they are in no way concerned in causing; and equal, nay, even greater, disadvantages, in foreign climates, have been weighed against them, and been unjustly considered as light in comparison. The frequent vicissitudes of atmospheric temperature are owing chiefly to the variability of the winds; depending less on the influence of the sun's rays during the day, and of radiation through the night, than in most other countries, even in the same latitude. But, although the vicissitudes of temperature are frequent, the range is generally limited. The *mean daily (or 24 hours') range* of the register thermometer, for London, taking *the average of the year*, is, according to Howard and Daniell, only 11°; in the midland counties, it may be taken as high as 14°; and in the peninsula of Cornwall, only at 8°, which may be considered as the general average range of most places situated on the sea coast, and possessing an ocean temperature. The observations made at Naples, Rome, Montpelier, and Geneva, give 13·3, 11·0, 12·0, and 12·5 respectively, although not made from a register thermometer, which would have shown the daily thermometric range to be greater. From what has been already stated, it might be inferred that the *extreme daily range* of the thermometer is greatest in the more inland parts of the country, somewhat less in London, much less near the sea coast, and least of all in the south-west districts; and the observations just referred to confirm, as far as they go, the inference. The *mean daily range* varies with the seasons. In the midland counties, it may be taken at 9° for January; 11° for February; 14° in March; 18° in April; 19° in May; 20° in June; 19° in July; 18° in August; 17° in September; 15° in October; 11° in November; and 10° in December; the variation thus increasing and diminishing with the calorific influence of the sun, and the cooling effects of radiation and evaporation from the soil and vegetation during the nights; being greatest when the sun's rays are warmest, and terrestrial radiation and evaporation most active. The mean daily range, for *the different months*, is much less near the sea coast, and somewhat less in London, where it is very little more than at Naples.

The *annual range* of the register thermometer is about 64° in London; 67° in the south-east districts; 65° in the southern; 58° in the western; and about 50° in the south-west. It is much above the highest of those in Rome, Naples, Nice, Pau, and some other places resorted to by those who make climate an apology for residence on the Continent! The *monthly range* of the thermometer is lowest in January and February, when it is 28° in London; 25° in Cheltenham; 31° in the northern counties; 34° in the south-east districts; and 24° at Penzance: and greatest in April and May, when it is 38° 36°, 39°, 44°, and 25½° in these places respectively.

Enough has been stated to show that the vicissitudes of temperature are not very great, although frequent. We are unable to compare them with those observed on the Continent in the same latitude, the observations we have examined being imperfect, and rarely made in the night, or by a register thermometer: but, taking into consideration the calorific power of the sun upon a greater extent of continent; the cooling action of the soil and its vegetable productions by evaporation, radiation, &c., upon the air; the influence of high mountains, &c. independently of various other circumstances already noticed; the mean daily and monthly ranges, and, still more, the annual range, must be much greater than in this country.

The difference between the mean temperature of the coldest and warmest months is only 26° in London; 30° in Paris; 24½° in England generally; 18½° in Cornwall; 31° in the south-west of France, and 35½° in the south-east of France; and 32½° in Italy.

The quantity of rain which falls in Paris is only 2 inches less than that which falls in London; whilst that which falls in Rome and Florence is, according to Dr. Clarke, nearly 32 inches, or as much as falls at Bristol and Clifton,—the only difference being, that at Rome the number of rainy days is 117, at Bristol about 140.

The influence of the climate of England upon the human constitution is similar to that produced upon the rest of the animal creation, and even upon the vegetable kingdom. The warmth of summer is never so great, nor its accession so sudden, as to occasion a too rapid developement, or too high excitement, of organised bodies; nor the cold of winter so extreme as to depress their vitality to an injurious degree. The localities, soil, and cultivation are such, with few exceptions, as prevent the generation of marsh effluvia, whilst the fresh and strong westerly winds which prevail, owing to the position of the country between the continent and ocean, cause a continued renewal of the atmosphere, even in the closest and most crowded streets of our manufacturing towns, and of the metropolis. As respects these towns, also, the quantity of rain which falls is productive of great benefit, inasmuch as it washes away the various animal exuviæ and impurities into the sewers and subways, and prevents them from tainting the air.

The limits of this chapter will not admit of a physiological investigation of the influence of our climate upon the human frame; the results, however, rather than the modes, of its operation may be briefly shown. Its humidity furnishes an abundant vegetation and supply of the most important plants required for the use of man himself, and for the sustenance and support of the various animals most suitable for his food; so that this and other qualities of our atmosphere, combined with the fruitfulness and high cultivation of the soil, are the sources not only of an abundant supply of the most essential articles of vegetable diet, but also of that animal food which is more largely consumed in this than in any other country, and a due proportion of which is required in temperate and northern climates for the proper support of the human species. It may, therefore, be fairly presumed, unless some powerful countervailing causes be in operation, that persons possessing the advantages of such appropriate nourishment from their childhood or youth will be also the most perfectly developed. But, except in a very few situations, or where they have been produced by the hands of man himself, no countervailing causes of the kind now alluded to exist. The same physical circumstances, which act so beneficially upon those individuals of the animal and vegetable kingdoms best suited for the food and accommodation of man, have also a most favourable influence upon the human constitution. And it is only in some limited districts that marsh exhalations partially counteract the effects of wholesome nourishment; and, in large and crowded towns and factories, that certain circumstances connected with arts and manufactories, and with the use of machinery, produce similar effects, although in a different way.

The climate of England, therefore, by its direct influence upon the human constitution, and by favouring an abundant production of those plants and animals most serviceable for food, is certainly not excelled by that of any part of the globe. Its variability, both in the commencement and course of the different seasons, is confined, as shown above, within moderate limits, and seldom affects vegetation and animal health to an injurious extent; and, though hurtful in a few states of disease, and the usually assigned cause of more disorder than it actually occasions, is really most favourable to the developement of the physical powers, and of the intellectual and moral endowments. Unless when extreme, frequent vicissitudes of weather preclude, as respects the community generally, the regular adoption of means to guard against their operation: the system consequently becomes habituated to them, and is fortified against their influence. That this is the case is shown by the vigorous constitution, mental activity, and longevity of the inhabitants, which are great in proportion to their exposure to the open air: and, the more the climate is allowed to operate its full effects, without the restrictions imposed by injudicious refinement, luxury, and vicious systems of physical and mental education, the more robust, muscular, and symmetrically developed does the human frame become. If we compare the physical and moral history of England with that of France, Italy, and other countries, supposed to possess the finest climate, the pre-eminence of the former in most particulars will be evident.

Among those who have formed a correct estimate of our climate is Sir William Temple. "I must needs," says he, "add one thing more in favour of our climate, which I heard the king say, and I thought new and right, and truly like a king of England, that loved and esteemed his own country: it was in reply to some of the company that were reviling our climate, and extolling those of Italy and Spain, or at least of France. He said he thought that was the best climate where he could be abroad in the air with pleasure, or at least without trouble and inconvenience, the most days of the year, and the most hours of the day; and this he thought he could be in England more than any other country in Europe."—(*Works*, vol. iii. p. 220.)

As to the climate of England in relation to the health of invalids, a few observations only need be made. Those who wish to possess further information on the subject will find it in the articles referred to below.* It has been too generally the practice to recommend foreign travel, or residence, to persons suffering from various slow diseases, in preference to a change to places in this country equally suited to such ailments with any abroad. Ignorance of the diversified climate of this kingdom, at different seasons, and of that of foreign parts, to which invalids are usually sent, the pernicious influence of fashion, and other motives, have led to this practice, which too many have had cause to deplore. So diversified is the climate of England, that it furnishes a suitable residence to persons suffering from any chronic disease; and, with extremely few exceptions, as judicious and beneficial a choice may be made in it as in any foreign country. Even in those diseases where it is beneficial to conjoin change of air with the use of mineral waters, the great variety of the latter, in different localities, enables the physician to make as advantageous a selection for his patient in this country as can be made for him in any other. When it is recollected that many, who travel in order to obtain the doubtful advantages of foreign climate, mineral waters, and change of living, are subjected to malaria, and other causes of disease, which scarcely exist in this country, and either fall victims to them, or experience their ill effects for many years afterwards, the advantages resulting from the practice will appear small indeed. There are certain well-ascertained facts* connected with change of climate to foreign parts, which should be known to those who wish to make the experiment. 1st, That the mean duration of human life, in those places of the Continent which are conceived to be sufficiently healthy to renovate the decayed constitutions of British visiters, is actually below its duration in the most unhealthy localities in this country. 2d, That consumptions—for the cure of which such places are principally recommended—are as prevalent, if not more so, among the natives, as in any part of England. 3d, That no place or town in continental Europe is exempted, at some period of the year, from cold winds, sudden variations of temperature, and other atmospheric vicissitudes; and that, whilst the the climate of our own country has been too generally depreciated, that of foreign parts, especially of Italy and the south of France, has been much over-rated, particularly as respects the amelioration and removal of pectoral complaints.

Having made those remarks, in order that a too prevalent delusion may be removed, a few observations merely, on the advantages and disadvantages of the climate of certain parts of this country, in a medical point of view, may now be offered.

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* See the articles *Climate*, *Arts and Employments*, *the Causation of Disease*, and *Endemic Influences*, in the Dictionary of Practical Medicine, by James Copland, M.D. F.R.S., &c.

The general use of coal fuel in England, and its employment in numerous steam engines, forges, &c., in manufacturing towns, owing to the quantity of sulphur it contains, and to the sulphurous acid fumes and fuliginous matter thereby generated, renders the air in these places irritating to the lungs, and increases the risk of a winter residence in them; especially in respect to those who suffer from, or are liable to, diseases of this organ. In such cases, removal to a more salubrious locality, or to one more suited to the existing ailments or morbid tendencies, becomes necessary. In most cases of residence in large towns or cities, an occasional change of air, and temporary residence in open and healthy localities, are more or less requisite: but the change should be made with reference to the ailments either threatened or existing; for the locality suited to disorders of the lungs is not appropriate to those of the digestive organs—the two great groups of diseases for which change is most serviceable: and even a situation which may benefit one affection of the lungs may be injurious to another.

The south coast of England is much milder and more moist than the east, the south-east, and inland parts, particularly from October to March, inclusive; but, from April to October, the temperature of the inland parts is higher. On the south-coast, Brighton, Hastings, Undercliff in the Isle of Wight, and various other intervening and adjoining places, are suitable winter residences for the weak and delicate, and persons liable to pulmonary complaints. *Brighton* is the best suited of these for persons affected with nervous and dyspeptic complaints; for the simply debilitated and relaxed; and for humoral asthma, and chronic affections of the air passages; owing to the greater dryness of the air than in parts more to the westward. *Hastings* and *Undercliff*, especially the latter, in consequence of their being more sheltered, and of the air being more humid, are good residences, in winter and spring, for persons affected by diseases of the lungs; but, in fully formed tubercular consumption, they are inferior to several places on the south-west coast, the temperature of which is about 6° higher than that of London, and 3° above that of the south coast.

The south-west coast is especially favourable to complaints of the lungs. The parts chiefly recommended for invalids are Penzance, Torquay, Dawlish, Sidmouth, Exmouth, and Salcombe. The air, both of the Land's End and of the coast of Devonshire and Cornwall, is remarkably soft, humid, mild, and equal. Of the parts just named, *Torquay* and *Penzance* are apparently the best in consumptive cases. The equality of their temperature, not only during the day and night, but also throughout the year, in conjunction with the other properties just stated, renders them the most appropriate places of winter and spring residence in this country for this class of invalids, and ranks them, in this respect, next to Madeira, and above all places in the south of Europe. The temperature of the air at night is at least 7° higher in them during the winter months than in London; and 10° or 11° above the night temperature at the same periods in the midland and eastern districts. This climate, although most beneficial to pulmonary diseases, characterised by inflammatory action or much irritation, or by scanty expectoration, is injurious, especially from May to October, in disorders consisting of simple debility, deficient nervous energy, and relaxation of the mucous surfaces and soft solids; and even in those diseases for which it is most beneficial, removal will be necessary to a somewhat drier air during the summer the patient deriving additional benefit from returning the succeeding winter.

The West of England has a temperature a little lower than the southern coast; but in March and April, the thermometer in the former rises above its elevation in the latter; and during the whole winter and spring it is higher on the west than on the east and south-east sides of the kingdom. Bath and Bristol are about 3° warmer than London during the months of November and December; but the difference is reduced nearly a half during January, February, and March. The vale of Bristol is the mildest and most sheltered in this district. Its winter climate is rendered mild by its vicinity to the ocean; whilst the surrounding mountains attract the clouds, and diminish the fall of rain below its amount in places in the vicinity. Bristol Hot-wells, and the lower parts of Clifton, are best suited to consumptive patients, and the more elevated situations of the latter, to other invalids. Bath and Clifton are preferable places of residence to the south-west district, for patients affected by protracted indigestion, or other affections of the digestive organs, by gout, and scrofula. In these affections, the waters of Bristol Hot-well, with regular exercise on horse back or on foot, prove extremely serviceable.

The inland parts of the kingdom are very favourable, during the summer, for the cure of various slow or constitutional diseases, particularly those places towards the west side which possess considerable elevation above the level of the sea. Malvern and the adjoining country, with the Malvern waters, are very serviceable in scrofulous and dyspeptic complaints. A summer's residence in Wales is often beneficial to consumptive patients, and those affected by diseases of debility, more especially when a course of goat's whey is considered necessary. Buxton, Matlock, Leamington, Cheltenham, and the country in their vicinity, are excellent places of residence, especially during summer and autumn, for invalids; these different localities being most suited to different ailments. Independently of the use of their respective mineral waters, and still more especially in conjunction with a judicious and appropriate recourse to these, they are very serviceable for those who are debilitated and relaxed, by whatever cause; whose digestive, secreting, assimilating, and excreting functions are imperfectly performed, or whose abdominal viscera are congested or obstructed. In these latter circumstances, especially, the appropriate use of the waters of those places, assisted by regular exercise on foot or horseback, by suitable medical treatment, and by mental relaxation and amusement, will often prove of great service.

The south-east districts enjoy a tolerably dry air, which, however, is often raw, keen, or chilling in spring and early summer; but is, from July to November, particularly during the intervening months, very restorative and bracing, especially to those who are relaxed by residence in the thickly inhabited parts of the metropolis and manufacturing towns. The places chiefly resorted to are the Isle of Thanet, Dover, Southend, and Tunbridge Wells. To those who do not require the Tunbridge waters, the Isle of Thanet is upon the whole the most beneficial. Its air is dry and bracing, and its soil allows the rain quickly to descend through it, preventing the cold and exhalations resulting from evaporation.

From the rapid survey now taken of the climate of this country, it will be seen that advantages are possessed by it above any observed in foreign parts. There is scarcely a place, and certainly no considerable town, situated in unfavourable climatorial circumstances; whilst the inhabitants of our vast metropolis, and of our crowded and busy manufacturing towns, have, within a moderate distance, and at an easy access, such changes of air, climate, and water, as are best suited to their wants and ailments, whether occasioned by the dissipations of fashion, the excitements of desire, the exhaustion of mental exertion, or the satiety of enjoyment. So variable, so diversified, and yet so salutary, is the climate of England, that threatened disease may be prevented, and protracted complaints removed, by a judicious change, made at proper seasons, and to suitable places; and, whether estimated according to its own merits, or compared with those of any other climate, we have real cause to exclaim, respecting it, with the Roman poet,

> "O fortunatos nimium, sua si bona nôrint!"

SECT. 9. *Botany.*

Since a small part only of this publication can be devoted to a scientific notice of the vegetable productions of the British Islands, we shall confine our remarks to such subjects as are of general interest, referring for more extended information to the "Outlines of the Geographical Distribution of British Plants,"* by H. C. Watson, Esq., and to Mr. Murray's "Encyclopædia of Geography." We have not thought it necessary to divide this article into separate heads for England, Scotland, and Ireland, but have made it applicable to all three.

Situated as the Islands of Great Britain are, between lat. 50° and 61° N., the 1,500 species of phænogamous plants which they are estimated to contain may naturally be expected to bear a considerable affinity with those of Germany, separated only by the German Ocean on the east, and those of the north of France, divided by the English Channel on the south; while, on the west, the vast Atlantic intervening between us and the similar latitudes on the continent of America, the species of plants will bear no sort of comparison: but, what is very remarkable, if a line be drawn from near the limits of perpetual snow, from the Alps of Switzerland and Savoy, in a north-westerly direction, across the summits of our highest mountains along those of moderate elevation in Labrador and Arctic America, to the lowlands of the extreme northern portions of that vast continent and adjacent islands, a very considerable affinity will be found in the vegetation; and twenty or more species, all eminently alpine or boreal, may be found in such situations throughout the whole length. If we trace the more remarkable features of our vegetations from the south to the north, we shall find it influenced no less by climate than by soil, thus testifying the truth of what was long ago sung by the Mantuan bard:—

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* Printed only for private distribution; but, through the liberality of the author, now in the hands of most persons to whom it can be useful.

> "Not every plant on every soil will grow,
> The sallow loves the watery ground and low,
> The marshes alders: — Nature seems to ordain
> The rocky cliff for the wild ash's reign;
> The baleful yew to northern blasts assigns,
> To shores the myrtles, and to mounts the vines."

In the extreme south of England and of Ireland we find many plants incapable of bearing the cold of more northern latitudes. Hence the strawberry tree adorns the woods of Killarney and of Bantry, with its rich evergreen foliage and its copious red berries, and comes to such perfection, that a trunk has been measured of 9½ feet in girth. It is only in our most southern latitudes that we find the large-flowered butterwort (Pinguicula grandiflora); the beautiful ciliated heath (Erica ciliaris); the Cornish heath (E. vagans); the acrid lobelia (Lobelia urens); two species of rampion, the round-headed (Phyteuma orbicularis); and the spiked (P. spicata); the graceful little sibthorpia (S. Europæa); the marsh isnardia (I. palustris); the Cornish bladderseed (Physospermum Cornubiense); the least gentianella (Exacum filiforme); whorled knotgrass (Illecebrum verticillatum); and the purple spurge (Euphorbia peplis).

The following are among the most striking and ornamental of our native plants, which scarcely reach the middle of the kingdom, and fail below the south of Scotland:—The water soldier, with its curious spear-shaped leaves (Stratiotes aloides); the water violet (Hottonia palustris); the small maidenhair grass (Briza minor); the sweet violet, "that loveliest herald of the spring," (Viola odorata); several kinds of mullein (Verbascum); the primrose peerless (Narcissus poeticus and biflorus); the common snake's-head (Fritillaria Meleagris); the Agrostis setacea; the star of Bethlehem (Ornithogalum Pyrenaicum); the two species of squill (Scilla autumnalis and bifolia); the mountain spiderwort (Anthericum serotinum); the Solomon's seal (Convallaria polygonatum); and sweet sedge (Acorus calamus); the yellow wort (Chlora perfoliata); the mezereon (Daphne Mezereum); the flowering rush (Butomus umbellatus); the yellow marsh-saxifrage (Saxifraga Hirculus), though this is on the Continent a very arctic plant; the clove pink (Dianthus caryophyllus and D. prolifer); several catchflys (Silene); Euphorbias, Cistuses, Anemones, the traveller's joy (Clematis Vitalba); the ground pine (Ajuga Chamæpitys); the wood sage (Teucrium Scorodonia); the crested and field cow-wheat (Melampyrum cristatum and arvense); some Orobanches, the Vella annua, Draba aizoides, and Iberis amara; some fumitories (Fumaria solida, aurea, and parviflora); the yellow and crimson Vetchlings (Lathyrus, Aphaca, and Nissolia); the Vicia hybrida, lævigata, and Bithynica; Hippocrepis comosa; Orchis Morio, pyramidalis, ustulata, fusca, militaris, tephrosanthos, and hircina; Aceras anthropophora; Herminium monorchis; all the species of Ophrys; Epipactis rubra, Malaxis Loeselii; the beautiful and rare Lady's slipper (Cypripedium Calceolus); the birth wort (Aristolochia Clematitis); the Roman nettle (urtica pilulifera) the Xanthium strumarium and Amaranthus Blitum; and mistletoe (Viscum album); the sea buckthorn (Hippophæ rhamnoides); and white poplar (Populus canescens).

The country of which these plants are the produce, including, however, the lowlands of Scotland, is distinguished by Mr. Watson as the *woody region;* which, he elegantly remarks, from one end to the other, "is an undulated plain of meadows, pastures, and cultivated fields, separated from each other by hawthorn hedges or stone walls, and thickly interspersed with parks, woods, gardens, towns, and high roads, altogether betokening a climate where man may attain a high state of civilisation, and live for ease and pleasure, as well as for laborious occupations. It is the region where flourish the trees and bloom the flowers rendered classic by our poets, and not the less loved by many of us, that their very commonness has made them familiar by vernacular names, without the aid of botanical systems or a dead language. It is, *par excellence*, the land of the daisy and cowslip, the oak and hawthorn, the hazel copse and the woodbine bower: the region of fruits and flowers, where the trees of the forest unite a graceful beauty with strength and majesty, and where the fresh green-sward of the pasture, commingling with the yellow waves of the cornfield, tells to us that here at least—

'The cheek of spring
Smiles in the kiss of autumn.'

"Black swampy moors, such as deface so large a portion of the next, or barren, region, are in this of comparatively rare occurrence and small extent. The downs and chases, in early spring are covered with the countless blossoms of the golden gorse, or the more gaudy broom, and empurpled with the different kinds of heath during summer and autumn. Little, indeed, as we may regard these shrubs, in Sweden and North Russia the gorse is prized as we prize the myrtles of the south; and our common heaths (Erica cinera and E. Tetralix) are unknown over a wide extent of Europe: nor does the whole of America produce a single specimen either of these or any other species of heath. The oak, ash, yew, hornbeam, alders, elms, poplars, and willows are the principal native trees of this region; the four first gradually yielding to the pine, white birch, and rowan, as we approach the higher portions, forming the upland zone. The beech, sycamore, and Spanish chestnut have been introduced, and the two first now spring up self-sown and readily. A climate in which the heat of summer is rarely excessive, and where rain and clouds are so frequent, is unadapted to the spontaneous growth of fruits; and we accordingly find our native productions poor in the extreme. The wild cherry, crab, bullace, and native pear are the arborescent fruit trees. The raspberry, strawberry, blackberry, sloe, hazel nut, hip and haw form a very indifferent catalogue for our shrubby and herbaceous fruit plants. The craneberry, bilberry, and crowberry, with the fruit of the rowan and juniper, common to this and the barren region, are greatly surpassed by one fruit, almost peculiar to the latter, viz. the cloud berry. The changes produced by cultivation, on some of the first-mentioned fruits, it is unecessary to detail. Lastly, the different kinds of gooseberries and currants cultivated in our gardens are probably derived from species indigenous to Britain, and are very apt to spring up in our woods and hedges from translated seeds."

Ireland is remarkable among the British Isles for producing exclusively certain plants, which are otherwise peculiar to the most southern continent of Europe, such as the strawberry-tree and large-flowered butterwort, above mentioned; the Irish Menziesia (Menziesia polifolia); London pride (St. Patrick's cabbage of the Irish, Saxifraga umbrosa); the kidney-shaped saxifrage (S. Geum), and its varieties; as well as the fringed sandwort (Arenaria ciliata), an inhabitant of mountains, upon the Continent; and what is more extraordinary, unless there has been some mistake about the plants in question, Professor Gieseké is stated to have found the naked-stalked yellow poppy (Papaver nudicaule) and the marsh ledum (Ledum palustre) upon the rocks of Achil head; whereas, in other parts of the world, these plants are very alpine or very arctic.

The Irish yew and the Irish furze, both well known in our gardens, may be considered rather as varieties of the common yew and common furze, than as distinct species.

The vegetation of the lowlands of Scotland scarcely differs, as may be supposed, from that of the north of England. The valleys in the north are filled with the remains of the ancient fir forests, and many of these are still of great extent. The Pinus sylvestris, of which they are composed (our only native fir), attains to an elevation on the mountains of 1050 feet, the oak 700, beech 750, alder about 900 feet, birch 1100, ash and sycamore 900, and hawthorn 800 feet. The extensive moors are empurpled with the autumnal blossoms of three species of heaths (Erica Tetralix, cinerea, and vulgaris, the latter Calluna vulgaris of Salisbury). Quitting, then, the belt or zone of our more hardy trees, and ascending the summit of our highest mountains, at an elevation of 4,300 feet (consequently below the limits perpetual snow), we find the vegetation gradually assuming a more alpine character. Gnaphalium dioicum, Empetrum nigrum, Rubus Chamæmorus, with Vaccinium Vitis Idæa, Leontodon palustre, Aira alpina (often viviparous) and Festuca vivipara, Epilobium alpinum, Cerastium alpinum and latifolium, Rhodiola rosea, Cochlearia officinalis and Statice Armeria (the three latter species being equally found on rocky places and upon our sea-coasts), Cherleria sedoides, Saussurea alpina, Saxifraga stellaris, nivalis, rivularis, and oppositifolia; the beautiful alpine forget-me-not) Myosotis alpestris), Veronica alpina, the brilliant V. saxatilis; Erigeron alpinum, Sibbaldia procubens, the silver-leaved lady's mantle (Alchemilla alpina), which is often washed down by the rains to a much lower elevation; Silene acaulis, of the beauty of which, forming purple cushions some feet in diameter, no one can form a conception without visiting its native place of growth; Salix herbacea, the humblest of our arborescent plants, and scarcely attaining a height, or, rather, length of a few inches, often scarcely visible but from its bright-coloured catkins; Luzula spicata; and, what may perhaps be reckoned the most alpine of all our flowering-plants, Luzula arcuata, inhabiting the same regions as constitute the summer residence of the ptarmigan and the white or alpine hare.

Plants peculiar to Scotland, and not inhabiting either England or Ireland, are Veronica fruiticulosa, saxatilis, and alpina; several alpine grasses and other glumaceous plants, such as Phleum alpinum and Alopecurus alpinus; Eriophorum alpinum; Juncus arcticus, castaneus and biglumis, and Luzula arcuata; Primula Scotica, Myosotis alpestris, Azalea procumbens, Gentiana nivalis, Sibbaldia procumbens, Convallaria verticellata, Epilobium alpinum, Arbutus alpina, Pyrola uniflora, Saxifraga nivalis and rivularis, Stellaria scapigera (the latter is exclusively British); Arenaria rubella and fastigiata, the Cherleria sedoides, Lychnis Viscaria and alpina, Spergula saginoides, Potentilla opaca, Nuphar Kalmiana, Ranunculus alpestris, Ajuga pyramidalis, Cardamine bellidiflora, Orobus niger, Astragalus Uralensis and campestris, Erigeron alpinum, Corallorhiza innata, Achillea tomentosa, Goodyera repens; the most alpine Carices and Salices; and dwarf birch (Betula nana). Two plants of Scotland deserve particular notice, as found nowhere else in Europe: these are Potentilla tridentata, abundant in arctic America, and upon the rocky and white mountains; and Eriocaulon septangulare. This latter genus is mostly tropical, or a native of the warm temperate zones in America, the East Indies, and Australia. The only exceptions to this rule are the Eriocaulon pellucidum of Michaux, and the plant in question; the former being found in North America, as high as Canada: and, upon examination, the two species prove identical. In these instances, the Eriocaulon and the Potentilla seem to have overcome many obstacles in their migration, and to have reached their eastern boundary. The Eriocaulon is confined to a few lakes in the Hebrides, where we have been surprised, in the month of September, to observe the high temperature of the water, which never freezes; and to some spots in the south and west of Ireland. The Potentilla is only found on one hill in Angus-shire.

Perhaps no country of equal extent in any latitude, will be found so rich in cryptogamous plants as the British Islands; and nowhere, probably, have these, the humblest, yet not the least beautiful, of Nature's works, been more successfully investigated; from the briny deep to the highest summits of our mountains, where the almost perpetual moisture favours the growth of numerous tribes of lichens and mosses.

Among the ferns, the elegant Adiantum Capillus Veneris, so common in the south of Europe, attains its northern limit upon the coast of Galway, in Ireland; and Trichomanes brevisetum is almost unknown, save near Bigley, in Yorkshire, and in one or two stations in Ireland, and in Madeira, whence we have lately received specimens from the Rev. J. T. Lowe. Of mosses, no less than 310 species are found in Great Britain. Of Algæ, 519 kinds, and among these are many that are useful to mankind; Fucus nodosus, vesiculosus serratus, and loreus yield us kelp in great abundance; and the value of this native produce, especially during the war, and when we were prevented from obtaining barilla from abroad, was very great in the northern parts of Scotland and Ireland. Laminaria esculenta, and saccharina, are eaten in the countries alluded to; as are Halymenia edulis, under the name of pepper dulse, and H. palmata, under that of common dulse.

Even the lichens have yielded an article of usefulness and of commerce; and that they might do so more extensively, there can be no question. The archil (Roccella tinctoria), indeed, finds its northern limit on the precipitous rocks of the Scilly isles, and there it grows so scantily as to be scarcely worth the gathering. Cudbear (Lecanora tartarea) and Perelle Lecanora Perella), are very abundant upon subalpine and exposed rocks. Tripe de Roche of the Canadian hunters (different species of Gyrophora), which saved the lives of our adventurous arctic travellers, Captain Sir John Franklin and his party, when deprived of other food, are frequent on the primitive alpine rocks; and Parmelia omphalodes and P. saxatilis, so abundant on stone walls and rocks throughout Scotland, yield a purplish dye in general use among the Highlanders. All our heaths and moors produce such a quantity of the reindeer lichen, that, were the climate suited to the animal, the rein-deer might be naturalised among us; and the Iceland moss or lichen (Cetraria Islandica), grows in such quantities among some of the mountains in Braemar, that we cannot but wonder that all which is sold in our shops should be the far-fetched produce of Norway, Lapland, and Iceland. There is a common but little known lichen on the trunks of trees, especially ash, presenting the appearance of roundish spots of a white or powdery substance. This is the Variolaria faginea. Its taste is intensely bitter, so that many hours elapse ere it leaves the mouth; and from it oxalic acid has been prepared to a very considerable extent by the French chemists.

The fungi are reckoned amongst the lowest in the scale of the vegetable creation; and the number of species is greater than that of any other order of plants; and even here all have their use, though in many instances to us unknown. Many hasten the decay of timber, as the Merulius lachrymans, which constitutes one of the kinds of "dry rot," and the different species of Rhizomorpha. Several are esculent in our country, as the mushroom, Agaricus campestris; and a hundred others of the same genus are employed on the Continent. Others are poisonous, especially the Agaricus (Amanita) muscarius; and its juice is used, when mixed with milk, to catch flies in Sweden; while, in the eastern parts of the Russian dominions, an intoxicating beverage is prepared from the same fungus, which has the most extraordinary effect upon the mind. Tubers, or truffles, belong to this family, as do those diseases on our corn, known by the names of blight, brand, bladder, or pepper-brand, &c.

Among the indigenous phænogamous, or flowering plants, whch claim, from the services they render or injury they do to man or beast, to be counted among the most interesting, and many of which are improved by cultivation, may be reckoned the following: —

Various grasses, particularly such as the sweet-scented vernal grass

(Anthoxanthum odoratum), the foxtail grass (Alopecurus), the catstail grass (Phleum), bent-grass (Agrostis), meadow-grass (Poa), cocksfoot grass (Dactylis), dogstail grass (Cynosurus), fescue grass (Festuca) rye grass (Lolium), &c. are food for cattle; while the reed (Arundo phragmites) serves for an excellent covering to our houses; and the lime grass (Elymus arenarius), along with some kinds of wheat-grass, (Triticum) and Carex arenaria (one of the sedges) assist to bind our sand hills on the shore, and to prevent the encroachment of the sea: thus bidding defiance to that element which no human force can withstand. Bread-corn is not the produce of any British grass.

Among the liliaceous plants, one, the Allium Schænoprasum, constitutes the chive. Asparagus (A. officinalis) is a native plant, and the butcher's broom (Ruscus aculeatus), whose seeds are considered by some to be an excellent substitute for coffee. Several of our orchisses yield salep in their roots.

Of the coniferous family we have the Scotch fir, already noticed (Pinus sylvestris), the juniper, and the yew. Of the amentaceous, 7 species of elm, the birch, and the alder; 68 kinds of willow, and among them some useful for timber, many for basket work, and a few medicinally, as astringents; 4 of poplar; the beech; 2 species of oaks, hornbean, and hazel nut. Of the nettle tribe, the common nettle, once eaten in Scotland*, if not in England, and the hop; and, of the dangerous euphorbiaceous family, several spurges, and the box. Two species of Daphne, mezereon and spurge laurel, the toughness of whose inner bark indicates the presence of a fibre, equally capable of being manufactured into cordage and paper as the East Indian Daphne Gardneri and D. Cannabina. Buckwheat; 2 or 3 kinds of sorrel and kidney-shaped Oxyria (O. reniformis), of which the agreeable acid is, perhaps, superior to that of any true sorrel. Some of our Chenopodia are boiled and used as a substitute for spinach. Of the beet, we have only the maritime kind in a wild state. Our Salsolias and Salicornias are hardly abundant enough to yield barilla. It is procured from plants of the same kind, in the south of Europe and North of Africa.

Among the aromatic family of Libiatæ, or lipped-flowers, we have several mints: —

> " The *thyme*, strong scented 'neath our feet,
> And *marjoram* beds, so doubly sweet; "

the germander, black horehound, betony, white horehound, basil-thyme, wild basil, &c. In the Scrophularia family, the figworts (Schrophularia), foxglove, eyebright, and *vervain*. Among the narcotic tribe, to which the potato belongs, the nightshade, deadly-nightshade, thorn apple, and henbane, are British. All our plants of the gentian family yield a bitter principle, less powerful, however, than the celebrated bitter gentian. The 2 species of periwinkle (Vinca) are the only individuals of the apocyneous order we possess; the common ash and the privet of the olive tribe. Our Vaccinium oxycoccos affords the craneberry, so excellent in tarts. The ramps of the garden are the roots of Campanula Rapunculus.

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* The young tops are boiled and eaten by the common people. " Nae doot, I suld understand my ain trade of horticulture," says Andrew Fairservice, the Scots gardener, "seeing I was bred in the parish of Dreepdaily, near Glasco', where they raise lang kail under glass, and force the *early nettles* for their spring kail." — *Rob Roy.*

The extensive natural order of the compound flowers (Compositæ), includes many useful plants. Salsafy, the root of the purple goat's-beard (Tragopogon porrifolius), Tansy (Tanacetum vulgare), wormwood (Artemisia Absinthium), chamomile (Anthemis nobilis), yarrow, &c.

The fuller's teasel (Dipsacus fullonum) is most extensively cultivated in the districts where woollen cloths are made, for the fulling of which its heads, all beset with hooked spines, are admirably calculated.

Our rubiaceous plants are wholly confined to such as afford a dye in their roots, as bedstraw (Galium), wild madder, woodruff, and field madder.

Among the umbelliferous tribe we reckon celery (Apium graveolens), parsley, carraway, fennel, samphire, angelica, parsnep, carrot, chervil, cicely, hemlock, coriander, &c. Gooseberries and currants appear to be indigenous.

Rosaceous plants yield us, besides

> "The garden's queen, the rose,"

the medlar, hawthorn, plum, and cherry, pear, apple, and service, raspberry, strawberry, and tormentil. The Leguminosæ (or pea tribe), furze, or gorse, dyer's weed (Genista tinctoria), broom, vetch, sainfoin, melilot, trefoils, medick, and lucerne. Of the Acerinæ, the maple, and the sycamore. Of malvaceous plants, the mallow, tree, mallow and marsh-mallow. The common flax is a native.

Among cruciferous plants, we have sea-kale, (Crambe maritima), dyer's woad (Isatis tinctoria), scurvy grass, horse radish, water cress, cole seed, turnip, cabbage, mustard, the white and the common (Sinapis arvensis and alba), &c.: and, lastly, among Papaveraceæ, *the white poppy*, which yields opium.

Such is a brief notice of some of the plants indigenous to the British Isles. If now we direct our attention, for a few moments, to useful *exotics*, we shall find that such is the peculiar temperature of Great Britain, and such the mildness of our winters, particularly in the southern districts, that in no spot of the world perhaps, has the industry of man brought under cultivation, and in the open air too, so great a number of interesting and useful plants, even of foreign origin. Many of these being of the highest importance to a commercial nation, while others constitute the greatest charms of our parks and pleasure-grounds, we shall here mention some of the most important: and if Sir J. E. Smith is correct in considering the hyssop of Scripture to be a species of moss*, and did our limits permit us, we should find what an infinite variety our country is capable of producing, even "from the cedar of Lebanon to the hyssop that springeth out of the wall."

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* The Gymnostomum truncatulum; Bryum Salomonis of Hasselquist.

The *cedar* is, indeed, a native of Syria, and of mountainous regions; so that, perhaps, it may not excite our surprise that it should flourish in the warmer parts of England. It has obtained, at High Clere, the seat of the Earl of Caernarvon, a circumference of more than 10 feet, at three feet from the ground.

Some natives, even of the tropics, have braved our climate, and come to perfection in the genial climate of Devonshire. We have seen 2 or 3 species of Cactus growing among the rocks of Torquay, where they were planted by the late Rev. Dr. Beck. Others require, again, more shelter, and are only

> "to be found
> Within the garden's cultured ground."

And of these the most striking is unquestionably the American aloe (Agave Americana), an inhabitant of the tropical parts of South America, from the level of the sea to an elevation of 9000 feet among the mountains. Thence it has been introduced to the warmer parts of the Old World, where fences are made of it, and a fermented liquor called *pulque;* and fibres for thread, and a substance analogous to soap, have also been extracted. It was, by the late Mr. Yates, planted in his garden at Salcome Bay, in Devonshire. In 1804, when only three years old, and but 6 inches high, it was placed in the open air, without any protection, save what was afforded by the neighbouring hills. In the year 1820, it had attained a height of 11 feet, and covered a space of ground, the diameter of which was 16 feet, when it threw up a flowering stem, which grew for 6 weeks at the rate of 3 inches a day, and in September measured 27 feet in height, its branches loaded with 16,000 blossoms; thus contradicting the generally received opinion, that the American aloe flowers only once in 100 years. Such a soil, and such a climate, it was with much judgment thought by the proprietor, might be suited, if any in Britain were, to the culture of the New Zealand flax (Phormium tenax), of which almost all kinds of cordage, sails, matting, clothing, &c., are made in the Australian group of islands, and in New Holland. It has been reared in the open air in various parts of Britain, and, in one solitary instance, as far north as Inverness. A considerable field at Salcombe Bay was planted with New Zealand flax, and promised a favourable result; but, owing to the sudden decease of Mr. Yates, we are unacquainted with the ultimate success of the experiment. No doubt it might be reared in the rich and sheltered valleys of the extreme south of England; the same that bear, unharmed by winter's snows, myrtles, the tea plant and camellias, Amaryllas Sarniensis, and Hydrangea, from China and Japan; Amaryllis vittata, Belladonna, undulata, and formosissima, the horse-shoe geranium, Pelargonium zonale, P. inquinans, P. radula, and P. glutinosa; numerous ixias, and heaths, and proteas, from the Cape; various magnolias, from the southern states of North America; Indian shot (Canna Indica), the lemon-scented vervain (Verbena triphylla), whose annual shoots often exceed 14 feet in length; the Celtis micrantha, several cistusses, yuccas, the Azorian jessamine, oleander, Daphne odora, Corræa alba, Melaleuca hypericifolia, and many New Holland plants: these, with several others, adorn the shrubberies of Guernsey, Jersey, and the southern shores of Britain. Even oranges, both the Seville and sweet kinds, and lemons, produce fruit. If the vine and olive, rice and maize, cannot be successfully cultivated, it is rather owing to the prevalence of moisture than of cold. Tobacco has been grown to very great advantage in the south of Ireland.

We are indebted to warmer climates than our own for the possession of most of our bread-corns. Wheat, a native, some say, of Sicily, was supposed to be introduced by the Romans, and is now extensively cultivated, occupying the temperate portion, which Mr. Watson calls the agricultural zone. It grows only in the valleys in Scotland, and is rarely found as far north as Aberdeenshire, at a greater elevation than 400 feet, though it has occasionally succeeded at 600 or 650 feet. In the north of England, according to Winch, it attains 1,000 feet, and in Forfarshire, are solitary instances of wheat being produced at 800 and 1,000 feet above the level of the sea. In the West Highlands and north of Scotland, and in Orkney and Shetland, wheat is almost unknown as a crop.

Next to wheat in importance, among our corns of foreign origin, barley may be ranked, which in all the agricultural zones is sown in rotation with wheat, especially the two-ranked species, Hordeum distichon. In Scotland, 2 other species, or varieties, the bigg, bere, or bear, or four-sided barley (Hordeum tetrastichon), and the six-sided bere, or bigg (Hordeum hexastichon), are universally grown, wherever there is arable land; and, in Aberdeenshire, they succeed well at an elevation of 950, and in some instances of 1050 feet, and are extensively used as bread.

Rye (Secale vulgare), a native of Candia, is cultivated in poor soils, in various situations, but is only occasionally mixed with wheaten bread. In Orkney, large fields of rye are grown, for the sake of its straw, which constitutes a most beautiful fabric for ladies' bonnets. By means of an instrument, a small steel cylinder with 4 blades, each tube of straw is readily split into four pieces, which are braided, or plaited, into the form required; then covered with a paste of sulphur and exposed to heat, and the whole mass is bleached to one uniform colour.

The cultivation of maize has been attempted, and that kind, especially, which is used in Canada, under an idea that a variety from so cold a climate could not fail to succeed here: but such speculators, as in the case of the locust tree, or false acacia (Robinia pseudo-acacia), seem to forget altogether the great heats of summer, and the depths of the soil, in those countries whence the plants were respectively introduced, only to be met with in a few highly favoured spots in our islands; and their hopes of success have been universally disappointed.

Among our fruit trees we can reckon but few exotics, which, as standards, will bear the open air of our country, and this not because of the severe cold of our winters (for in no country, probably, under the same latitude, except on the west coast of North America, are they so mild), but for want of a constant summer heat to ripen the fruit, and bring it to perfection before the frosts set it. The fig, the quince, and mulberry, are, indeed, exceptions; but they hardly produce good fruit beyond the south or middle of England: as well as certain of the plum tribe, if indeed these may not be considered as improved varieties of some Prunus of our own country. The largest of our strawberries is said to be a native of Chili, but the finest come from the United States. Cucumbers and gourds, from Asia, may often be seen loaded with fruit in the open air; but apricots, peaches, nectarines, and grapes, all probably from Asia, in almost every part of Britian require the shelter of a wall, or, like those tropical productions, pines and guavas, need the protection of glass and artificial heat: and nowhere in the world, perhaps, are the choicest fruits brought to such a degree of flavour and size, as by the skill of the British horticulturist.

The produce of our kitchen gardens is too familiar to every one to need particular notice here, containing much that is calculated for the use and for the luxury of our tables. The individual productions, however, are of very old introduction; and it has often been a subject of remark, that, notwithstanding the great encouragement given in our country, by its institutions in all parts of the kingdom, to promote the cultivation of vegetables and fruit, scarcely a new vegetable or a new fruit, of any real value, has been introduced. South America has given to us, and to every part of the world, the potato: and though the Arracacha of Columbia, and the Oxalis crenata of Peru, have lately been vaunted as affording a root equal to that of the Solanum tuberosum, they have either proved, on trial, of little real value; or, unsuited to our climate. The skirret (Sium Sisarum), once very prevalent in our gardens, and highly prized for its excellent root, is now almost unknown. It abounds so much in saccharine matter, that an ounce and a half of pure sugar has been yielded by half a pound of this root. The Jerusalem (a corruption of girasole, the Italian name for the sun-flower, in allusion to its supposed peculiarity of turning to the sun): artichoke (Helianthus tuberosus) is a native of Brazil; Scorzonera of Spain, as well as the common artichoke and cardoon; spinach of Asia; while the New Zealand spinach, an excellent substitute for the latter, comes, as its name implies, from New Zealand. Onions are natives chiefly of the South of France and North of Africa. In Egypt, we know that onions were highly esteemed by the Israelites; and no wonder, says Hasselquist, for whoever has tasted the onions of Egypt, must acknowledge that there are no better in any part of the world. Endive (Cichorium Endivia) is from China and Japan; lettuce from the Levant; the common cress) Lepidium sativum) from Persia and the Levant; radish (Raphanus sativus) from China; and, lastly, we may mention, that the rhubarb so extensively used in tarts (Rheum palmatum and hybridum), is derived from Asia, while the rhubarb root of commerce, only coming to perfection in its native climate, is now generally supposed to be that of the Rheum Emodi.

Our fields are indebted to the south of Europe for the liquorice

(Glycyrrhiza vulgaris), largely cultivated about Pontefract in Yorkshire, and for the beet (Beta vulgaris), equal in quality to the turnip for the feeding of cattle; and to Asia for hemp. Madder has been attempted to be raised, but without success; probably the heat of our summers is not sufficient to elaborate the colouring principle. Beans (Vicia Faba) are considered to have come originally from Egypt; the field-pea (Pisum arvense) from the Levant. Thus does the bounty of nature, aided by the skill of the agriculturist, contribute, in no small degree, to our national prosperity and comfort.

SECT. 10. *Zoology.**

Of the three kingdoms of nature, — the animal, the vegetable, and the mineral, which divide amongst them all the products of the earth, — our present attention will be restricted to the first. The botanist investigates the vegetables which a bountiful Providence has spread over the surface of the earth, — giving to each region such as are best suited to its inhabitants. The mineralogist searches beneath, and makes known the earths, the metals, and other substanecs; these are extracted, and, either in a raw or manufactured shape, are used at home, or sent abroad. The animal kingdom is the province of the zoologist, who is to investigate the nature of the indigenous animals, and of such foreign species as are capable, by domestication, of improving our existing breeds; he is to point out such as are useful, and such as are detrimental, to the labours of the agriculturist; with the best means for encouraging the one and counteracting the injuries of the other. This is strictly the economic department of zoology: by which we mean the application of the science to the simple purposes of life. It would appear, at first sight, that these points could be very easily ascertained, and that nothing is wanting but ordinary experiment and observation to know what animals are hurtful and what beneficial, — what would bear domestication, and propagate in these islands, and what would defy all attempts to naturalise. The contrary, however, is the fact; otherwise, we should not have witnessed, in our own days, the failure of the expensive efforts made to introduce the wapati of North America into the parks of England, and the reindeer of Iceland into the Highlands of Scotland. The truth is, that the practicability of such projects mainly depends upon certain considerations of a general nature, regarding the habits and economy of animals, which belong more to the province of the philosopher than to that of the projector. Hence the statistics of zoology, to be well understood, must be contemplated under two points of view; first, as regards that original distribution, or assignment, of animals to particular countries, which is the work of nature; and, secondly, the introduction and naturalisation of such others as our convenience or pleasure renders it desirable to procure from foreign regions, and which is consequently the work of man. We shall, in the following pages, contemplate the zoology of Great Britain under both these aspects: both will afford much interesting information; and, although the first may appear not to be immediately connected with the practical part of our subject, it will eventually be perceived that they are intimately conjoined.

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* This article applies not merely to the zoology of England, but to that of Great Britain and Ireland.

1. *On the natural distribution of animals in the British Isles.* — There is no fact which more irresistibly or more universally proclaims design in the great scheme of creation than the mutual relation and adaptation which exists between the nature of animals and the country in which they were originally destined to live. It is not merely in some one or two isolated circumstances that these laws are conspicuous; but, the more minutely we examine into details, the more we become convinced of their universality. Every one knows, for instance, that animals of cold countries are protected from the extreme rigour of winter, either by an unusual thickness of clothing, or by the instinct of hybernation. Those, on the contrary, which have been appropriated to warmer latitudes, are thinly clad, and only sleep during night. The camel, again, endures thirst longer than any other quadruped; and is consequently placed, as one of the chief brute inhabitants, in the most arid and parched regions of the globe. The swiftest quadrupeds, for the same reason, are appropriated to those parts in which we find the most extensive plains; as the deserts of Africa, the pampas of tropical America, and the prairies of the northern states. In these and all other thinly cultivated regions, the original features of that harmonious combination we have just spoken of may still be traced. The face of nature, and her races of primeval inhabitants, still, in a great measure, exist; and the philosopher may observe how well the temperature of the climate, the nature of the surface, and the productions of the soil, harmonise with the animals originally appropriated to them. By degrees, however, these features become obscured, if not obliterated. Each generation sees a slow but wide-spreading increase of civilisation, bringing with it all those attendant changes which transform the face of a country, and affect its brute inhabitants. Majestic forests, the ancient fortresses, as it were, of innumerable families of animals, are felled by the axe of the woodsman, or destroyed by the more devastating effects of his fires: their ferine inhabitants are hunted or slain, the nests and eggs of hundreds of different birds destroyed, and tens of thousands of the insect races irretrievably perish. For a while, those who escape seek refuge in other tracts, still in a state of nature; but the time comes when these retreats are also invaded, until at length the few remaining stragglers of a once numerous tribe become lost and exterminated even in the region originally assigned to them. To a feeling mind, there is something melancholy in this prodigal destruction of animal life, although abundantly sanctioned by the necessities of the case. It serves, however, to show the prejudice, if not the ignorance, of those who condemn the pursuit of zoology as *cruel:* for a moment's reflection would convince such persons that a single woodsman, by felling a dozen trees, destroys more insects than all the entomologists of Europe would capture for their cabinets in a year.

The changes we have spoken of, as taking place in the original zoology of any country, are nowhere more apparent than in Europe;

and, if any part of that great geographic division is more particularly calculated to show the truth of these observations, it is certainly the British Islands, which, within the records of history, were covered with wide-spreading forests, filled with large quadrupeds, though now not a trace remains of either. It thus becomes necessary, in treating of the statistical zoology of Great Britain, to arrange our observations under two heads. In the first instance, we shall offer some remarks upon the animals known to have been formerly natives, but which, from various causes, have long been exterminated, or are now slowly disappearing. These changes, and the causes that have produced them, will lead us, secondly, to a review of the present state of our brute population, and the reasons which seem to account for those peculiarities belonging to the existing zoology of Great Britain.

We shall be accused, perhaps, of advancing a startling proposition, when we maintain that Great Britain, as a whole, is much more fertile than any of the islands of the Mediterranean; premising, that by the word fertility we mean the *quantity*, and not the *luxuriance*, of vegetable life. True it is that the variability of temperature, the sudden and nipping frosts, the blighting winds, and the depressing fogs of these islands, make them insupportable to the Italian, and scarcely endurable to those who have sojourned in brighter climates. But that moisture in the atmosphere, and that perpetual recurrence of rain for which our climate is so proverbial, are the chief causes of the fertility we are speaking of. Rain is one of the greatest promoters of vegetation; and hence, with all the disadvantages of our northern situation, our fields, our trees, and our woods possess a richness of verdure, during the greater part of the year, which the traveller will seek for in vain on the sunny shores of Sicily, or the plains of Southern Italy. For six months of the year, the traveller who crosses the country surrounding Etna, or traverses that of Puglia, sees the ground parched and cracked, the herbage scorched, and a brown, burnt-like tinge spread over the face of nature; and, though he may admire the luxuriance of the vine, and see the sickly-green of the olive never cast its leaf, or change its hue for our rich autumnal tints, he will at once be convinced that the verdure of Britain is one of its chief characteristics. Nor is this the only effect of the peculiarity of our climate upon vegetation. We should say that England, at least in comparison with Sicily (so frequently styled the garden of Europe), and the south of Italy, is much more thickly covered with wood, notwithstanding the havoc caused by cultivation in our ancient forests. The hedges which divide the innumerable fields and enclosures, into which the land is now portioned, constitute, in the aggregate, a mass of vegetation, which only escapes our notice from its being parted out into *strips*, and ramified in all directions. When, also, it is considered that in nearly all parts of England, timber trees, of elm, oak, and ash, are planted, at short intervals, in the line of our hedges, and border every road or lane, the fact becomes indisputable, that this is an unusually wooded country, although, at the same time, more highly cultivated, perhaps, than any other of equal extent in Europe. That it was formerly much more wooded, is likewise an undoubted fact. Discoveries are continually being made of the remains of ancient forests, now covered with accumulated soil, while historians attest the former existence of others, equally extensive, even in the vicinity of the metropolis; of some known in modern times merely by small patches of ancient trees; while of others the name alone is left. Now, if we compare this abundance of vegetation with what is seen in Sicily and Southern Italy, the marked inferiority of the latter is obvious. In former ages, the shores of the Mediterranean were doubtless much better wooded than now; but it is of their present, not of their primeval state, that we are speaking. In Sicily, for instance, the enclosures are so few that one of its fields would almost be sufficient for a small English farm: while the fences, or rather partitions, by which they are separated, are formed almost entirely of loose stones, gathered from the surrounding soil, or which have fallen from the rocky declivities. In the vicinity of the towns, walls, instead of hedges, protect the gardens and enclosures of the villas; and the orchards of the peasants are surrounded by fences of the cactus or prickly pear, which, although an admirable defence against depredators, gives neither food nor shelter to birds or insects. The only trees that are seen beyond the gardens are tall Lombardy poplars, and groves of olives, interspersed with mulberries; the former are planted only on the sides of mountain streams, while the latter, from the dryness and hardness of the olive leaf, seem incapable, like most evergreens, of giving nourishment to insects. The traveller may ride for leagues, during six months of the year, without seeing a verdant meadow, and, as he leaves the vicinity of the chief towns, the plains and mountains are frequently destitute, for many miles, of a single timber tree. The same remarks, with little variation, are applicable to the whole of Southern Italy and Greece, always of course excepting the Lower Calabria. It may be urged, indeed, that these facts by no means establish the superior *abundance* of vegetation in Britain, seeing that this deficiency of timber trees is the effect of art rather than of nature: but, besides these, there are really *natural* causes for this difference; since, as the heat is so much greater, and the quantity of rain so much less in the south than with us, it follows that, during the greater part of summer, half the Italian vegetation is withered, while that of England is green and fresh. If, however, we consider the degree of *luxuriance* and *fecundity* of the vegetable world in these two regions, the superiority of Italy is unquestionable. Heat, and a moderate degree of moisture, are the great promoters of vegetable life: it consequently follows that, when once the soil of Italy is softened, the heat of the climate causes vegetation to spring up with astonishing luxuriance.

The preceding observations may be thought, at first sight, somewhat irrelevant to our present object: but, in truth, they are not so, as will subsequently appear. The abundance of vegetation in the British Islands is one of the chief causes to which we must trace its zoological statistics; or, in other words, the peculiarities of its zoological history. Animal life, throughout the world, is always proportioned, in its variety and numerical amount, to that of the vegetable; the latter supplying food to the former in the proportion, probably, of 10 herbivorous animals to one that is carnivorous. Nay, the deficiency of vegetation operates quite as much, although indirectly, to the injury of rapacious animals, as to those of an opposite description; for, as they feed upon others, which are herbivorous, it follows that, where the vegetable food of such animals is deficient, they will be scarce, from a want of food, and this scarcity of plant-eating animals will create a corresponding scarcity of those which are carnivorous, and depend upon the former for support. These facts being unquestionable, we are now to consider in what manner they operate upon the immediate subject before us.

It seems highly probable, from the foregoing considerations, that these islands, before the records of history, were nearly covered with vast and almost impenetrable forests, whose continuity was only broken by the heaths, moors, and fens, found in all uncultivated countries, and many of which remain with us to this day. That these forests gave shelter to numerous indigenous quadrupeds of a large size, cannot, for a moment, be doubted; whether we draw the inference from analogies presented by the former condition of other countries, or from that law of nature, before alluded to, of the reciprocal equality in the distribution of animals and vegetables. On this point, however, we have historic evidence. Besides those few animals mostly of small dimensions, which still find shelter in the patches of woodland scattered through the country, our old historians make incidental or direct mention of several others, which have long since disappeared, leaving not a wreck behind. We leave to geologists to determine whether, among these ancient races, we are to include the elephant, tiger, alligator, rhinoceros, and hippopotamus, all of which, in a modern compilation upon British animals, are brought in as "extinct species," merely because their fossil remains have been found sometimes at great depths, and in such formations as have induced others to conclude, with greater show of reason, that they belonged to a different creation of things. Certain it is, however, that the hyænas of the Kirkdale and Plymouth caves really inhabited those dens in which their bones are now found. But none of these quadrupeds are mentioned in history: yet our chronicles record the existence of the bear, wolf, wild boar, wild ox, wild cat, and beaver, as inhabitants of our ancient forests, whence they have long since disappeared, with the exception of the wild cat still found in some parts of Scotland.

A few short notices of the extinct animals, which, although exterminated, form an important part of the aboriginal zoology of these islands, may not be uninteresting to the general reader. They are here given on the authority of Pennant, whose researches as an antiquary led him to collect and apply all the incidental notices of this sort which he met with in our early chronicles to the illustration of his interesting work upon British zoology.

That a species of *bear* was once a common inhabitant of this island, is apparent from different authorities. Martial informs us that the Caledonian bears were used to heighten the torments of the unhappy sufferers on the cross (*Martial Lib. Spect.* ep. 7.), and Plutarch relates that bears were transported from Britain to Rome, where they were much admired. Ray also mentions, that in some old Welsh MSS. relating to hunting, this animal is reckoned among our beasts of chase, and that its flesh was held in the same esteem as that of the hare or boar. Many places in Wales still retain the name of Pennarth, or the Bear's Head, another evidence of their existence in that principality. It does not appear how long they continued in Wales, but there is proof of their infesting Scotland so late as the year 1057, when a Gordon, in reward for his valour in killing a fierce bear, was directed by the King to carry three bears' heads upon his banner. Long after their extirpation from this island, these animals were imported for the cruel sport of baiting, which was classed, by our rude unpolished ancestors among the "merry disports" of the Elizabethan age, and considered, in those days, meet entertainment for an ambassador!

That the wolf was the most destructive beast of prey in these islands, during the Saxon heptarchy, is well known. King Edgar attempted to extirpate them in England, by commuting the punishments of certain crimes into the acceptance of a number of wolves' tongues from each criminal; and in Wales he pursued the same object, by converting the tax of gold and silver into an annual tribute of 300 wolves' heads. Yet, notwithstanding these enactments, and the assertion of some authors, it seems his scheme did not succeed. We find that, some centuries after his reign, these animals were again increased to such a degree as to become the object of royal attention, for Edward I. issued his mandate to Peter Corbet, ordering him to superintend and assist in the destruction of wolves in the several counties of Gloucester, Worcester, Hereford, Salop, and Stafford. In the adjacent county of Derby, also, as Camden informs us, certain persons at Wormhill held their lands by the duty of hunting and taking the wolves which infested the country, whence they were styled *wolve-hunt*. In the reign of our Saxon king Athelstan, wolves abounded so much in Yorkshire, that a retreat was built at Flixton, in that county, *to defend passengers from the wolves, that they should not be devoured by them.* And such ravages did these animals make during winter, particularly in January, when the cold was severest, that our Saxon ancestors distinguished that month by the title of *wolf-moneth*. They also called an outlaw *wolf-shed*, as being out of the protection of the law, and as liable to be killed as that destructive beast. It seems, however, that many centuries after wolves had been extirpated from England, they were by no means uncommon in Ireland: and even so late as the year 1710, some were found still existing—(See *Smith's Hist. of Cork*, v. ii. p. 228.), the last presentment for killing wolves, as Pennant observes, being made in the county of Cork about that time. Scotland was cleared of these pests at an earlier period, the last being killed in 1680 by Sir Ewen Cameron of Lochiel.

The wild boar was a favourite animal of chase with our ancestors, and the greatest care was taken of its preservation. It appears that Howeldda permitted his grand huntsman to chase this animal only from the middle of November to the beginning of December. The Norman conqueror is said to have barbarously punished, with the loss of their eyes, those who were convicted of killing the wild boar, the stag, or the roebuck. Fitz-Stephen incidentally mentions, that in his time a *vast forest*, on the north side of London, abounded with all the large animals of the chase, among which were wild boars. Probably, the thicket now called Hornsey Wood formed part of this "vast forest," the frequenters of which, instead of valorous hunters, are now tea-drinking and pic-nic parties of citizens! In the reign of Charles I., however, wild boars had become so scarce, even in the New Forest, Hampshire, that many were turned into it to breed; but the civil wars, which soon after ensued, caused their speedy destruction.

The wild ox, or, more properly, the Urus, which formerly inhabited, in considerable numbers, the forests of Britain, was of a gigantic size, and of a totally different species from the domestic ox; although Pennant, and other writers of his school, fancied they were the same. The horns of the wild urus have not only been found in the same strata with the bones of the lost elephant, proving that it belonged to the zoology of a former period, but also in more recent formations, as peat mosses, marshes, and beds of sand. This huge animal, no doubt, existed in Britain in the time of Cæsar: and the trophy of the horns of the Dun Cow, killed by Guy, Earl of Warwick, exhibited in Warwick castle, are unquestionably those of a wild urus. This, and many other skulls of the same sort, existing in different museums, are nearly one-third larger than those of domestic oxen, square from the orbits to the occipital crest, and somewhat hollow at the forehead: the horns show a peculiar rise from their root, at the side of the above crest, upwards; they then bend outwards, and finally forwards and inwards. "No domestic race," as Hamilton Smith remarks, "possess this peculiarity of turn, but numerous specimens of inferior size, found fossil in some of the Cornish mines, have this shape, and the wild bull of Scotland alone in part retains it." It does not exactly appear at what precise time this formidable race of oxen was exterminated in England. Fitz-Stephen (a learned monk, who lived in the reign of Henry II., and wrote a History of London, recorded by Leland) mentions these animals, under the name of *Uri Silvestres*, among many others, which in his time, were found wild in the *great forests close to London*. Leland also enumerates, among the provisions at the great feast of Nevil, Archbishop of York, six wild bulls. The Scotch urus, before alluded to, seems to have been a small and inferior breed of this species, almost peculiar to the woods of Southern Scotland and Northern England. It is probable that this breed was exterminated from the open forests long after that larger species which had more especially inhabited Southern England; for Sibbald assures us, that in his days a wild and white species was still found in the mountains of Scotland: and Bishop Lesley, who wrote in 1598, asserts that cattle, in a wild state, were then found in Stirling, Cumbernauld, and Kingcairn. But, some time before the Reformation, the few that remained were already confined in parks belonging to ecclesiastical establishments, whence they were transferred at their dissolution to Drumlanrig. It was at this latter place, and in the park belonging to Chillingham Castle, Northumberland, that Pennant — (*Tour in Scotland*, v. ii. p. 124.) first saw these modern descendants of the ancient urus. He proceeds to describe them as having lost their manes, but retaining their original white colour, and great fierceness; they were of a middle size and long-legged, with black muzzles and ears, their horns fine, with a bold and elegant bend. The keeper of those at Chillingham said, that the weight of the ox was 38 stone, and of the cow 28 stone; that their hides were more esteemed by the tanners than those of the tame race, and that they would give sixpence per stone more for them. "These cattle are wild as any deer, for, on being approached, they instantly take to flight and gallop away at full speed; never mixing with the tame species, or coming near the house, unless constrained by hunger or very severe weather. When it is necessary to kill any, they are always shot; if the keeper only wounds the beast, he must take care to keep behind some tree, or his life would be in danger from the furious attacks of the animal, which will never desist till a period is put to its life." —(*Brit. Zool.* v. i. p. 26.) Thus far Pennant, whose words are those of an eye-witness. On a subject so interesting, we shall add some further particulars, furnished by the most eminent modern naturalist in this department of the science. The individuals of the Scotch urus, observes Hamilton Smith, in the park of Burton Constable, were all destroyed in the middle of last century by a distemper. The race is entirely of a white colour; the muzzle invariably black; the inside of the ear, and about one-third part of the outside, from the tips downwards, red; the horns are white, with black tips, of a fine texture, and, as in fossil skulls, bent downwards. Bulls weigh from 35 to 45 stone, and cows from 25 to 35 stone, — 14 pounds to the stone. Before they were kept in parks, they were probably larger and more rugged; old bulls still acquire a kind of mane, about two inches long, and their throat and breast are covered with coarser hair. Those at Burton Constable differed from the others, in having the ears and tips of the tail black. In their manners, also, they were unlike domestic oxen, and assimilated more to the ancient urus. Upon perceiving a stranger, these animals gallop wildly in a circle round him, and stop to gaze, tossing their heads, and showing signs of defiance: they then set off, and gallop round a second time, but in a contracted circle, repeating this circular mode of approaching till they are so near that it becomes prudent to retire from their intended charge. The cows conceal their young calves for eight or ten days, going to suckle them two or three times a day; if a person comes near the calf, it conceals itself by crouching. One, not more than two days old, very lean and weak, was discovered by Dr. Fuller. On his stroking its head, it got up, pawed the ground, bellowed very loud, and, going back a few steps, bolted at his legs: it then began to paw again, and made another bolt; but, missing its aim, fell, and was so weak as not to be able to rise. By this time, however, its bellowing had roused the herd, which came instantly to its relief, and made the Doctor retire. When one of this breed happens to be wounded, or is enfeebled by age or sickness, the others set upon it and gore it to death. These animals were killed, to within a few years, by a large assemblage of horsemen and country people armed with muskets; the former rode one from the herd, and the latter took their stations on walls or in trees. There was grandeur in such a chase, but from the number of accidents which occurred, it was laid aside. We believe, concludes Major Hamilton Smith, that at present none remain, excepting at Chillingham Castle, the property of the Earl of Tankerville, near Berwick-upon-Tweed: at Gisborne, in Craven; at Lime Hall, in Cheshire; and at Chartley, in Staffordshire. The anecdote above given of Dr. Fuller has been ascribed to Mr. Bailey of Chillingham. There is also a large breed, not perfectly white, in the Duke of Hamilton's park, Lanarkshire, Scotland. It seems hardly necessary to refute the opinion of a modern compiler on "British animals," that "the remains of oxen, which occur in marl pits in this country, seem all to belong to the "*Bos taurus*," or common ox; for both Cuvier and Hamilton Smith have proved that they are those of the *Bos urus*.

The beaver, which is mentioned as still existing in small societies on the unfrequented banks of one or two of thc great European rivers, was formerly found in Great Britain, but has for many ages ceased to exist here and in the greater part of the Continent. Pennant remarks, that Giraldus Cambrensis, who travelled through Wales in 1188, gives a brief history of its manners; and adds, that in his time it was found only in the river Fervi. Two or three waters in that principality still bear the name of Llyn yr afange, or the beaver lake; attesting the existence of these animals in more than one locality. Mr. Pennant mentions having seen two of their supposed haunts; one in the stream that runs through *Nant Francon;* the other in the river Conway, a few miles above Llanrwst; and both places, in all probability, had formerly been crossed by beaver dams. Beavers, however, must have been very scarce even in the earliest times; for by the laws of Howel the Good, already alluded to, the price of one of their skins was fixed at 120 pence, a great sum in those days. The Welsh call them *Croen Llostlydan*, that is, the broad-tailed animal. Beavers, however, were not confined to Wales; for in remote times they must have been found both in Berkshire (*Phil. Tr.* 1759) and in different parts of Scotland, since their bones have occurred in these situations in beds of marl and in peat moss.

Such were the quadrupeds that once ranged through the forests of Britain, as their indigenous soil, and which formed no inconsiderable proportion of those originally destined to this portion of the world. Their extirpation must have been gradual, but it has been complete; nor is it at all difficult to account for their loss by the progressive cultivation of the soil, and by the destructive effects of the chase; to these causes also must be attributed the great numerical diminution of several birds, mostly of the aquatic order, which, although not absolutely extirpated from our islands, have gradually diminished even in our own times, and are become either exceedingly rare as natives, or are merely seen as stragglers. Two of the largest birds of game, not only of Britain, but of Europe, are now absolutely extinct in these kingdoms, although they were seen in the last generation. These are the Urogallus Europæus (Cappercailzie), or great cock of the wood; and the Otis tarda, or great bustard. The first is a noble bird, still found in the North of Europe, measuring commonly about 2¾ feet long, and weighing from 13 to 14 pounds. It seems to have been confined, in these islands, to the fir woods of Ireland and Scotland. In the latter kingdom, a specimen was seen so late as 1760, in the woods of Strathglass; and it was found in Stathspey until 1745. In the northern parts of Europe it is still common; and a fine pair which we saw in the autumn of 1829, hanging up in a poulterer's shop in Paris, was stated to have come from Hungary. The great bustard is a still larger bird, measuring at least 4 feet, and weighing about 26 pounds. Pennant affirms, that in his days (1777) these birds inhabited "most of the open countries of the south and east parts of this island, from Dorsetshire as far as the Wolds in Yorkshire," and are generally found in flocks of fifty or more: but, in 1812, his editor observes, "the breed is now nearly extirpated, except on the downs of Wiltshire, where it is also very scarce." At present we believe that it is only to be met with on a particular estate in Norfolk, the proprietor of which (we honour and respect his feelings) is so desirous of preserving a remnant of this noble indigenous race, that he prohibits their being shot, upon any pretence, within his domain. In Scotland, owing to the mountainous nature of the country, and want of open downs, it seems always to have been rare; yet it has been shot in Morayshire.

To pursue this inquiry into the remaining orders of the animal kingdom would be superfluous, were it even possible. Notwithstanding the great number of fish indigenous to our seas and fresh waters, some may possibly have been exterminated from the latter, and the larger fish-quadrupeds (as the different whales and porpoises) are no longer to be met with in those latitudes where formerly they were common. Very many species of insects, also, even within the records of entomological science, have been actually exterminated. A striking instance of this regards the Melitæa tessellata, *Steph.*, figured by old Pettevir, and described by him as "pretty common in Caen Wood." The Cynthia Hampstediensis, *Step.*, is likewise similarly mentioned by the same accurate author, who calls it "*Albins Hampstead eye*," where it was caught by this curious person, and is the only one I have yet seen. These instances, among conspicuous and showy insects, are sufficient to make us believe, that when the "great forests round London," and in other parts of the empire, were progressively destroyed, a considerable number of insects of rare and local species were eventually exterminated. Few persons, not even professed entomologists, are aware of the very narrow limits to which some insects are confined. A species may be in the greatest profusion within, perhaps, 2 or 3 acres of ground, beyond which it may never have been seen. Setting aside instances that may be cited on the testimony of others, we shall merely cite one out of several which fell under our own observation in tropical America. In a small brush-wood part of the forest of Urupee, in the province of Bahia, we met with a new and striking Hesperia, in such profusion that thousands might have been captured. Beyond this spot, however, it was not to be found; nor did we ever meet with single specimen, before or since, during nearly three years of entomological research in Brazil. There can be no doubt, therefore, that the influence of cultivation has lessened the numerical amount and the number of native species of animals, in every department, independent of such as have been exterminated by the chase.

Animals now found in the British Islands, &c.—Let us now consider the actual zoology of Britain, turning to such animals as still inhabit our islands, and either roam at large, as indigenous natives, or thrive and multiply in a state of domestication. The latter will claim our first attention, and they are all comprised in the following list:—

Quadrupeds
Horse.
Ass.
Domestic Ox.
Sheep.
Goat.
Pig.
Dog.
Cat.

Birds
Peacock.
Turkey.
Fowl.
Guineahen.
Muscovy Duck.
Goose.
Tame Swan, and perhaps the Pheasant.

Commencing with the quadrupeds, we perceive that those most adapted to the service of mankind, whether to lighten his labour, clothe his body, or supply him with food, have been abundantly supplied by the beneficent Creator; who, by endowing them with peculiar docility, and with a physical constitution capable of living in almost every climate, has obviously fitted them for the particular service of man. The plains of Central Asia are generally thought to have been the cradle of the human race, whence, as from a centre, the different branches of the primitive family diverged in all directions; slowly, but surely, fulfilling the command, that they should be "fruitful, and multiply, and replenish the earth." With them went their "flocks and herds," and such other creatures as had been provided for their more immediate use. It is natural, however, to suppose that the animals thus following the primitive nomadic tribes would soon acquire a much wider geographical range than man himself. Individuals would be frequently straying from the camp, or lost during a march: thus every tract or region, through which the wandering patriarchs successively passed, received, in all probability, the original stocks of their domestic animals, which for a season might continue wild, yet, by their natural instinct, would return to the haunts of men so soon as colonies were settled near their vicinity. We can conceive no other cause more natural, or more rational, to account for the almost universal distribution of these animals over the Old World. And it is further strengthened by the remarkable fact, that we have seen, within the compass of modern history, the same dispersion take place in the New World, in regard to the horse, ox, and other animals. Before the arrival of the Spanish conquerors, these quadrupeds were unknown; for if, as is generally supposed, the continent of America was peopled by colonies from the northern regions of Asia, it follows that the emigrants could not carry with them animals they did not themselves possess; as neither the ox, the horse, nor the ass, is found in Kamschatka. Individuals from the first two of these classes escaped from the settlements of the Spaniards, or were dispersed during their wars; and it was thus, no doubt, that the pampas of Paraguay were filled by the horses and oxen, that are now killed merely for the sake of their hides. These remarks will show the futility of all dissertations upon the native country of such species as are now, in fact, naturalized in almost every climate, yet cannot, with certainty, be traced to any one. If, however, there be any region to which the authority of the best writers assigns the greater part both of the quadrupeds and birds in the foregoing list, it is assuredly Western Asia, or those parts inhabited by the purest of the Caucasian race of mankind. But the wild ass mentioned by Persian and Indian travellers, as found in this region, is the Dziggetai of the Tartars (Equus Hemionos), the ονος αγριος, or Hemionos of the Greeks, a very distinct species; and wild horses have never been seen by any trustworthy traveller. The sheep, however, still inhabits the solitary recesses of the Caucasus; wild dogs exist both in India and Western Asia; and the original stock of our domestic cat has been supposed to have been discovered in Northern Africa by the celebrated naturalist and traveller Rüppell. Why the horse should be regarded as "indigenous," merely because "it lives and propagates, nearly in a state of nature, in the Highlands of Scotland," it is not easy to imagine. The common pheasant "lives and propagates" in the Regent's Park, or at least in almost every park throughout England, and should, according to such reasoning, be also "regarded as indigenous."

The *wild cat* of Britain may be said to have disappeared from several places within the memory of the present generation, for we find no record of a specimen having been shot or captured of late years in Cumberland and Westmoreland, where, if the race be not absolutely extinct, it is now exceedingly rare. We have recently, however, procured some information respecting this animal, which, as it may interest the reader, we shall insert. It appears that in the county of Dumfries, and more especially in the vicinity of Moffat, where the mountains are partially clothed with woods of birch, wild cats are still pretty abundant. During the day they are seldom seen, except occasionally by the sportsman upon the larger branches of trees. As night approaches, however, they emerge from their retreats in search of prey, visiting the poultry yards of the cottages and farm houses, where their predatory visits are generally known by the devastations they commit. Their yells are loud, being distinctly heard at a considerable distance, and they generally utter them in concert. Although several efforts have been made to domesticate this wild breed, by searching for, or capturing, the young ones at a very early age, every attempt has hitherto failed: the kittens possess all the wildness and ferocious disposition of their parents, and as soon as they are able to run about, and take care of themselves, make off for the woods. It is, nevertheless, remarkable that individuals of this wild race sometimes seek intercourse with the domesticated females of the adjoining cottages, and thus a cross breed has been produced, partaking only of the half savage nature of one of the parents, but losing the colour and markings which distinguish the wild from the tame races. Some of these remain in a state of domestication, and are not unfrequently seen in the cottages round Moffat; but others prefer a life of perfect liberty, and join their wild companions in the woods. The average size of these wild cats is rather below that of the domesticated breed *, but much larger individuals are sometimes killed by the sportsman, and which are probably old males; the people round Moffat distinguish these animals by the name of *blue cats.* It has been generally thought that the domestic cat derived its origin from the wild species; but this has been questioned, and with some show of reason, by several writers. Rüppell is of opinion that the *Felis maniculata,* discovered by him, in a wild state, in Northern Africa, is the original stock from which the domestic cat of the Egyptians was derived, and whence has also sprung the house cat of Europe. Temminck has adopted this opinion of Rüppell, and it is supposed to be corroborated by the following curious circumstance related by Pennant: — "That excellent prince, *Howeldda,* or *Howel the Good,* did not think it beneath him (among his laws relating to the prices, &c. of animals) to include that of the cat, and to describe the qualities it ought to have. The price of a kitten, before it could see, was to be a penny; till it caught a mouse, two-pence; and when it commenced mouser, four-pence. It was required, besides, that it should be perfect in its senses of hearing and seeing, be a good mouser, have the claws whole, and be a good nurse; but, if it failed in any of these qualities, the seller was to forfeit to the buyer the third part of its value. If any one stole or killed the cat that guarded the prince's granary, he was to forfeit a milch ewe, its fleece and lamb; or as much wheat as, when poured on the cat, suspended by its tail (the head touching the floor), would form a heap high enough to cover the tip of the former." This fact is curious, as setting in a striking point of view the simplicity of ancient manners, and as rendering it highly probable, that the domestic cat had been but shortly introduced previously to Howel Dha; but it gives no support to Rüppell's opinion as to the native country of the cat: an opinion which, though espoused by some, has been rejected by many able naturalists. Wild cats were formerly reckoned among beasts of chase, as appears from the charter of Richard II. to the Abbot of Peterborough, giving him leave to hunt the hare, fox, and wild cat. The fur was used in lining robes; but it was not esteemed of the most luxurious kind, for it was ordained "that no abbot or nun should use more costly apparel than such as is made of lambs' or *cats' skins.*" Pennant does not give his authority, but mentions, that in his time, the wild cat inhabited some of the mountainous and woody parts of England, living mostly in trees, and feeding only by night; when it attacked not only poultry, but kids and lambs.

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* If this be true, the animals referred to are not the real wild cat, but the domestic race run wild, which is common enough in wooded and hilly districts, both in this country and in Ireland. The real wild cat is invariably half as large again as the tame. — *Editor.*

Regarding the few remaining quadrupeds of Britain, as the hedgehog, martin, polecat, otter, &c., little can be said that is applicable to the nature of this work. It is much to be wished, however, that the vulgar prejudices regarding the fancied injuries done by the hedgehog were overcome, for a more useful animal to the farmer can scarcely be named.

The chief of our domestic birds have, in like manner, been originally brought from Asia; the principal exceptions being the turkey, guinea fowl, and musk duck. A few notices of these familiar inhabitants of our enclosures may interest the reader. The peacock is still found wild in different parts of India, and sometimes in great abundance: it is, without exception, the most imposing and magnificent of birds. Alexander, who first saw it in vast numbers on the banks of the Hydraotis, was so struck with its surpassing beauty, that he made a severe punishment be inflicted on those who destroyed it. Ælian states that, on its introduction into Greece, it was so highly esteemed, that a male and female were valued by the Athenians at 1000 drachmæ, or 32*l.* 5*s.* 10*d.* sterling. Peacocks were then domesticated at Samos, where they were preserved about the temple of Juno in that island, as a fit emblem of the queen of the gods. They were great favourites with our ancestors, both as serving for food and ornament. Ernald de Aclent paid a fine to King John, of 140 palfries, with sackbuts, lovains, gilt spurs, and peacocks' crests, "such as would be for his credit." The Romans, also, highly esteemed them for their tables; but at present only the young are eaten, the flesh of the old bird being thought hard and dry. Our countryman Willoughby affirms, that this bird will live to 100 years; although Aristotle mentions only 25 years. In its native forests the peacock has been described as a shy bird; but this may be doubted, if the following account of the Indian mode of catching them be correct. A kind of banner is prepared, having some lighted candles fitted upon it, and paintings of peacocks; this, during the darkness of the night, is held up in the trees upon which the birds roost: dazzled by the lights, and deceived by the figures, they begin to stretch out their necks, and are thus easily caught by the noose of the fowler, who draws the cord and secures his game.

The wild turkey, from which our domestic races have unquestionably sprung, is still found in the more unfrequented tracts of Louisiana, where they live in societies, as do most gallinaceous birds. Mr. Audubon has given a long and interesting account of its native manners, to which we must refer the reader. Pennant supposes that turkeys were first seen in France in the reign of Francis I., who died in 1547, and in England in the reign of Henry VIII. The first part of this statement is corroborated by Le Grand d'Aussy, a better authority than Pennant as to such matters, who states, that the earliest authentic notice of turkeys in France is in a work of Champier, published in 1560, where it is said they were introduced *ab hinc paucos annos.*— (*Vie Privée des Français*, i. p. 290.) Pennant, however, is wrong in supposing they came originally from Mexico; for our recent acquaintance with that country justifies the conclusion that the southern range of the turkey does not extend so far. Other writers specify the year 1524 as the date of its introduction into Britain; and about 1585 these birds began to form one of the dainties at Christmas feasts. Vast quantities are annually reared in Norfolk and Suffolk, which used to be driven to the London markets in flocks of several hundreds, the drivers managing them with great facility, by means of a bit of red rag tied to the end of a long stick; this, from the antipathy the birds bear to any scarlet colour, effectually answering the purpose of a scourge. They are now, however, mostly killed in the country; and about Christmas, the Norfolk and Suffolk coaches for London are heavily laden with these birds, sometimes to the total exclusion of passengers. In a wild state they grow to a much larger size than when domesticated; but the plumage, although somewhat darker, does not materially differ.

The domestic fowl is the most important of those birds appropriated to the service of man, and we consequently find it dispersed through almost every nation in temperate and tropical climates. The whole genus, in fact, seems to possess the same moral character; so that, in the different breeds and crosses which have sprung from them, it is difficult, if not impossible, to say whether they have originated from one or from several stocks. Certain it is, however, that the original seat of this family is in Central and Southern Asia; where, even to this day, not one only, but several species are found in a perfectly wild state. Colonel Sykes, in a short but interesting notice on the birds of that part of India called the Deckhan, enumerates three species; one of these, however, the gigantic cock (Gallus giganteus, *Tem.*), he regards as having been introduced from Sumatra or Java. Authors have expressed various opinions, as has been now intimated, as to the original stock whence has sprung our domestic fowl. Temminck is disposed to trace it to the Bankiva cock (Gallus Bankiva), which, in a wild state, inhabits the woods of Java, where it is called Ayam Bankiva. Others suppose that the jungle cock (Gallus Sonneratii) is the parent of all our common breed of poultry; but the most general opinion is, that the domestic cock (the Phasianus gallus cristatus of Linnæus) is a distinct species; and Colonel Sykes, who had the superior advantage of investigating the question upon the spot, renders it no longer a matter of doubt. He observes, that "the domestic fowl is so abundant in the Deckhan, that in parts of the country not much frequented by Europeans he has bought from 8 to 12 full-grown fowls for 2*s*. Many of the hens, particularly of the villages in the Ghauts, *are not to be* distinguished from the wild birds, excepting only in the want of the cartilaginous spot on the wing-covers."

The Guinea hen (Numida meleagris) is the only one of our domestic birds introduced from Africa; being almost confined to the western or tropical regions of that continent. Guinea fowl are the Meleagrides, or Gallinæ numidicæ, of Athenæus and other ancient writers. According to Barbot, who calls them Pintadas, they are found in flocks of 200 or 300: when at rest, they perch upon trees, their food consisting chiefly of worms and grasshoppers, which they search for in marshes and morasses: they feed, however, also upon seeds. They were in great request among the Romans, who served them at their banquets; and although, from their quarrelsome disposition, they are not very generally brought into our farm yards, they are thought, by many persons, to be equal in flavour to the pheasant. The difficulty, also, of rearing them operates against their becoming so common as the domestic fowl.

The pheasant (Phasianus Colchicus, *Lin.*) derives its name from Phasis, one of the chief rivers of Colchis, whence the species is supposed to have been introduced into Europe, about the æra of the Argonauts. Be this, however, as it may, these birds were much sought for, and are now generally distributed throughout Europe, excepting in its more northern provinces. It seems, however, even in Italy, to be confined only to parks and preserves; for its size and value, as a bird of game, would soon operate to its extermination, had it no such protection. The ringed pheasant is by some thought to be a variety, but by others a distinct species. The common partridge (Perdix cinerea) is a well-known native; but that usually termed the red-legged, or Guernsey species (Perdix rufa), has been introduced from that island and from the coast of France. It has now become common in several preserves, especially in those near Orford, in Suffolk, belonging to the Marquis of Hertford. This nobleman imported many thousand eggs, which were hatched under hens; and the young ones, when sufficiently grown, were turned out and liberated. It is affirmed by Bewick, that in some of the eastern counties of England the individuals of this species are more numerous than those of the native breed; but this is doubtful. It is bad game, inasmuch as it runs along the ground, and does not rise before the dogs. Like the silver pheasant, too, it beats away the common species from its haunts: so that most gentlemen by whom it had been patronised are now taking measures for its extirpation.

We now come to the aquatic birds, of which the two principal species, the duck and the goose, are indigenous to our islands; of the former family, the musk duck, we believe, is the only one which breeds with any facility in a state of domestication, although many efforts have been made to render the teal, the Carolina summer duck, and several others, equally familiar and prolific. The musk duck is valuable from its superior size; and, although frequently called the *Muscovy*, is so far, in fact, from being a native of Russia, that it was originally brought from South America. Muscovy is doubtless, a corruption of musk, originating in an erroneous opinion, of its native country. These birds are not so common among us as formerly, although their flesh is good, and they are very prolific of eggs.

The swan of our preserves and rivers is a different species from that which is occasionally seen wild in the North of Britain. It is said that it originally came from Eastern Europe, but its native country is very uncertain; the fact being that nearly all of the swan genus are white, and resemble each other so closely, that not even the eye of a naturalist can immediately detect their specific differences. Hence arises the impossibility of ascertaining which were known to the ancients, or assigning a correct name to such as are incidentally mentioned by the older writers. The tame swan is chiefly known from the wild by the difference in its bill, and by having thereon a hard black knob at the upper base. In former times, the swan was a conspicuous dish at all great regal feasts: and Pennant remarks that, even when he wrote (in 1777), cygnets, or young swans, were fattened at Norwich about Christmas, and sold for a guinea a-piece. These birds were formerly held in so much estimation that, by an act of Edw. IV., "no one that possessed a freehold of less clear yearly value than 5 marks was permitted to keep any, other than the son of our sovereign lord the king." And, by the 11th of Henry VII. cap. 17., the punishment for taking their eggs was imprisonment for a year and a day, and a fine, at the king's will. Though at present they are not so much valued as an article of food, they are still preserved, for their great beauty, on several of our rivers, particularly on the Thames and Trent: but nowhere, as Pennant observes, in greater quantity than on the saltwater inlet of the sea near Abbotsbury, in Dorsetshire.

Having now enumerated those animals at present domesticated in Britain, it may not be improper to notice a few others belonging to the same natural orders, and known, both from theory and experience, to possess similar dispositions. And here we cannot refrain from adverting to the disappointment experienced by the public at large, but more especially by those who felt interested in the projected experiment, at the complete failure of the Zoological Society in carrying into execution the main purpose for which it was avowedly instituted, namely the introduction into Britain of the domesticated animals of other countries, and the dissemination of such as were adapted to our climate among the proprietors and others. It may be fairly asked, after an interval of ten years, aided by public patronage, and by enormous funds, what has this society done in furtherance of the professed object upon which it set out? We have inquired, but in vain, to learn what new animals have been introduced into *other* menageries than their own; nor have we been more fortunate in hearing that one successful effort has yet been made to breed, even within their own gardens, any animal, either useful or ornamental, which heretofore had frustrated the efforts of ordinary keepers and exhibitors of wild beasts. This total failure, then, of the objects for which the society was formed, is surely enough to make those by whom its affairs are managed relinquish them altogether. While it is not too much to expect that if, from their large funds, they would appropriate a few hundred pounds a year to the adjudication of premiums for the production of scientific works; to the support of qualified collectors in foreign countries; and to the formation of a library and museum, the committee would foster among its members a higher and a purer taste than that of idly gazing upon the antics of bears, monkeys, and parrots. It is not too much, we repeat, to expect that, by *such* measures, the public taste would be raised and refined, and legitimate science effectually advanced.

It is very questionable, whether the introduction of new quadrupeds be desirable. We seem to possess the greater number of those that are really essential, or even useful, to civilised man. By the extirpation of the wild and ferocious inhabitants of our primeval forests, the latter have been converted into pastures, supplying food to the horse, ox, and sheep. We neither want the elephant nor the camel as beasts of burthen, nor the reindeer for its milk, nor the vicuña for its wool: we derive all that such animals can supply from others, more suited to our climate, and, therefore, better adapted, in every respect, for their peculiar purposes. The rocky mountain goat, whose wool is superior in texture to that of the finest cashmere, might, perhaps, be introduced (Richardson's *Fauna Bor. Americana*, vol. i.), but the cultivated land seems to be already sufficiently supplied with quadrupeds. It is indeed rather ludicrous, so long as its rational inhabitants pay more for bread than any other people, to propose stocking the island with new animals.

In respect to birds, there are many, the introduction of which would be highly ornamental; and it may be fairly supposed, that the naturalization of larger breeds would be a desirable addition to our present stock of useful poultry. The gigantic cock (Gallus giganteus), for instance, is nearly twice the size of our ordinary species, and is, we believe, equally easy of domestication. Temminck states, that it is not uncommon in the farmyards of southern Europe, particularly near Padua, where it grows to an immense size, often exceeding ten pounds in weight. In a wild state, this gigantic race, like most of its family, is found in the forests of India, and it has the singular peculiarity of resting on the first joint of the leg: how far its fecundity may place it on a level with the common fowl, is not exactly known. The family of Curassow birds (Craxidæ *V.*) comprehends, with the exception of the turkey, nearly all the indigenous domestic poultry of South America. They are not only large-sized (that is, between the fowl and the turkey), but very prolific and sociable. It seems, however, that nothing has yet been accomplished in the way of generally introducing these elegant strangers into our poultry yards or preserves; although they are by no means uncommon, in such situations, upon the Continent. Temminck assures us that, in many menageries in Holland, the curassow birds are as familiar as the common poultry. Ameshoff, by bestowing proper care upon them, breeds several of the species with great success: the Crax rubra, and the Crax pauxi, among others, produced as numerously, under this gentleman's management, as our common domestic fowls; and his table was abundantly supplied by them. The flesh of the young is white, and of the most exquisite flavour, being superior even to that of the pintado or the pheasant. It is clear, however, that we are in no absolute need of these birds. A very large species of fowls, of the size of small turkeys, is found in the neighbourhood of Dublin; and Dublin crammed fowls are celebrated all over Ireland. Our common turkeys and fowls supply us with delicate food, and abundance of eggs, while the duck and the goose, among water birds, create a sufficiently agreeable change.

On the actual State of Great Britain, as regards its indigenous Animals.

We now come to the more immediate object of statistic zoology; that is, to exhibit the actual state of its existing native animals, and of the means by which they are supported. It has been the practice of some writers to give a much more limited definition of the term *indigenous* than we think it fairly entitled to. An indigenous animal, with them, is one which lives and dies in the same country, never quitting it, either for food or a warmer temperature; hence, in their divisions of summer residents, occasional visiters, and stragglers, we occasionally find birds as truly British as the common sparrow. To prevent, therefore, any misconception of the following remarks, it must be premised, that, by *indigenous*, we mean such birds as not only live and breed in these islands, but such also as are found with us only during a portion of the year. Such residence is obviously a part of their natural economy, for it is clear they cannot dispense with that law of nature which compels them, as it were, to leave their former residence, and come to us. They are, therefore, to all intents and purposes, as strictly native as the swallow, which passes his winter, like so many members of our aristocracy, in a warmer climate, and who, for the same reason, might be considered foreigners. With this understanding, we shall now lay before the reader a list sufficiently accurate for our present purpose, of the quadrupeds and birds of Britain, the nature of their food, and the means of supply they possess. To do the same with the insects, and the lower animals, from their vast numbers, would be impossible; but some general remarks upon them will conclude our statistical survey of British animals.

Our indigenous quadrupeds amount to about 37, which we shall enumerate in the following list; and in those natural orders wherein, in another work, we have scientifically arranged them: —

Order I. QUADRUMANA. *Cuv.* *Four-handed Quadrupeds.* Food.

Bats.
Ronolphus ferrum equinum. Horse-shoe Bat.
—— minutus. Lesser Horse-shoe Bat.
Plecotus auritus. Long-eared Bat.
—— barbastellus. Barbastel Bat.
Vespertilio serotinus. Serotine Bat.
—— Nattererii. Natterer's Bat.

Order II. FERÆ. *Rapacious Quadrupeds.*

Erinaceus Europæus. Common Hedgehog.
Sorex araneus. Common Shrew.
—— fodiens. Water Shrew.
Talpa Europæa. European Mole.
Meles vulgaris. Common Badger.
Mustela vulgaris. Common Weasel.
—— putorius. Polecat.
Mustela erminea. Stoat or Ermine.
Martes fagorum *Ray*. Beech Marten.
—— abietum. Pine Marten.
Lutra vulgaris. Common Otter.
Canis vulpes. Fox.
Felis sylvestris. Wild Cat.
Phoca vitulina. Common Seal.
—— barbata. Bearded or great Seal.

Order III. CETACEA. *Whales.*

Balænoptera musculus. Round-lipped Whale. *Fish.*
—— boops. Sharp-lipped Whale. *Fish.*
—— rostrata. Snout Whale. *Fish.*
Physalis vulgaris. Razorback Whale.
Balæna mysticetus. Common Whale.
Delphinus phocæna. Porpoise. *Fish.*
—— Orca. Grampus. *Fish.*
—— melas. Ground Grampus. *Fish.*
—— Delphis. Common Dolphin. *Fish.*
Delphinus tursio. Blunt-toothed Dolphin. *Fish.*
Delphinoptera albicans. Whitish Grampus.
Hyperoodon bidens. Double-toothed Grampus.
Monodon monoceros. Narwal. *Fish.*
Physeter tursio. Flat-toothed Finner. *Fish.*
—— microps. Spermaceti Whale. *Fish.*
Catodon macrocephalus. Cachalot Whale.

Order IV. GLIRES. *Gnawers.*

Mus musculus. Common Mouse.
—— sylvaticus. Field Mouse.
—— messorius. Harvest Mouse.
—— rattus. Black Rat.
—— decumanus. Norway Rat.
Myoxus avellanarius. Dormouse.
Arvicola aquatica. Water Rat.
—— agrestis. Field Mouse.
Sciurus vulgaris. Common Squirrel.
Lepus timidus. Hare.
—— variabilis. Alpine Hare.
—— cuniculus. Rabbit.

Order V. UNGULATA. *Hoofed Quadrupeds.*

The Horse, Ox, Boar, Sheep, and Goat, strictly belong to this order; but, as these animals are only found in a state of domestication, they are omitted in the present list, being fully treated of in another part of this work.

Cervus elaphus. Stag.
Dama Europæus. Fallow Deer.
Capreolus Europæus. European Roe.

By this list, it appears that our indigenous land quadrupeds amount to 37; while those fish-like species, inhabiting the sea, are 16: of these latter we shall take no account in the subsequent remarks, because we cannot extend the same investigation to the fishes, upon which nearly all the aquatic quadrupeds almost entirely subsist. On looking over this table, we perceive a remarkable disproportion in the number of carnivorous or bird-catching species, compared to such as are herbivorous; so that, however extraordinary it may appear, we may safely affirm that nearly half our native quadrupeds are ferocious; for it is the habit, and not the size, of an animal which confers this character; and it is well known that the whole family of weasels, however small, are more blood-thirsty and cruel than even the lion or the tiger. In what manner, then, are we to account for this unusually large proportion of such quadrupeds? Simply by the fact of the great number of birds and insects inhabiting these islands; a number far exceeding those of many countries of much larger dimensions. These ferine animals are, no doubt, much less numerous than formerly; but so, also, are those upon which they feed: both have, doubtless, diminished, numerically, in due proportion to each other; and the bird-catching quadrupeds are obviously intended to keep within due limits another order of animals, which annually make large additions to their numbers. The same mutual relation may be traced between the larger carnivorous and herbivorous species: the former, originally consisting, as we have seen, of vast numbers of wolves, preyed upon the deer, roebuck, and goat; these latter have almost disappeared from the open country, while their enemies have been totally extirpated. Cultivation, in fact, has nearly annihilated both; for man has not only destroyed the wolves, but he has taken to himself those pastures which supplied food to the animals which they persecuted; which latter are now to be found almost exclusively in preserves especially appropriated to their use, or in mountain districts. During summer, when insects abound, the bats are abroad, constantly thinning their numbers in their twilight excursions; but when their services, in this respect, are no longer wanted, these insect-eaters retire to their winter-nooks, and pass the rest of the year in sleep. Foxes not only suck eggs, and destroy birds, like stoats, weasels, and martens, but they are the natural enemies of the hare and rabbit; so that, here again, we see instanced the demand and the supply of food. Let us now turn to the granivorous quadrupeds, or such as more especially live upon nuts, fruits, and grain. Under this head we have 8 or 9 species, whose food is supplied by the various products of our fields and woods. Allied in analogy to these animals, but essentially distinct from them, is the common mole, a carnivorous quadruped, more numerously and widely spread than perhaps any other. Is there, it may be asked, any reason for this?

Certainly: the chief food of the mole is earth-worms, whose distribution is universal, and whose numbers, beyond all calculation, exceed those of any other animal in existence: it is fit, therefore, that they, too, although hid in the bowels of the earth, should have their consumer, and he is the mole. There can be no doubt that squirrels, at one time, abounded in all our woods, for no tree is more common in Britain than the hazel nut, and the only two vertebrated animals which are known to make this fruit their chief repast are the squirrel and the nuthatch. No reasonable cause can be discovered for the diminution of the latter; but the squirrel is persecuted and destroyed by gamekeepers, employed by country gentlemen to clear their parks and preserves of "vermin." Perhaps these destroyers of our few remaining British animals imagine that squirrels, like stoats, suck the eggs and feed upon the young of partridges and pheasants. Nature no doubt intended that the vast quantities of oak trees found in Britain should supply abundance of food to the wild boars, with which our island was originally stocked. But here man has been at work, and, having destroyed the consumers of this abundant vegetable supply, has created an anomaly which did not naturally exist. Every autumn, thousands and tens of thousands of umbrageous oaks scatter a plentiful supply of ripe acorns; but, alas! those denizens of the forest, for whose support this repast was originally intended, have long since been exterminated; and the acorns are now only gathered by the cottager for his tame pig, or eaten in the vicinity of the farmyard by the hogs permitted, in autumn, to leave their sties, and grub among the fallen leaves of the neighbouring oaks.

But it is time to consider our native *Birds*, which, from their more frequent occurrence, and greater numbers, possess a superior interest. These we shall arrange in the following list, and in their natural orders, corresponding to those of the quadrupeds. This list is further interesting, as it exhibits, for the first time, the British birds arranged according to their natural affinities: —

Order I. RAPTORES. *Birds of Prey.*

1. Aquila chrysaëtos. Golden Eagle.
2. ——— albicilla. Cinereous Eagle.
3. ——— haliaetus. Osprey or Fishing Eagle.
4. Falco Islandicus. Gyr Falcon.
5. —— peregrinus. Peregrine Falcon.
6. —— Subbuteo. Hobby.
7. —— Æsalon. Merlin.
8. —— Tinnunculus. Kestril.
9. Accipiter pulumbarius. Goshawk.
10. ——— Nisus. Sparrow Hawk.
11. Circus æruginosus. Moor Buzzard.
12. Circus cyaneus. Hen Harrier.
13. —— cinerarius. Ash-coloured Harrier.
14. Strix Bubo. Great Horned Owl.
15. —— otus. Long-eared Owl.
16. —— brachiotus. Short-eared Owl.
17. —— Scops. Little Owl.
18. —— nyctea. Snowy Owl.
19. —— flammea. Barn Owl.
20. —— stridula. Wood Owl.
21. —— passerina. Little Owl.
22. —— Tengmalmi. Tengmalm's Owl.

Order II. INSESSORES. *Perching Birds.*

Tribe DENTIROSTRES. *Tooth-billed Tribe.*

23. Musicapa atricapilla. Pied Fly-catcher.
24. Musicapa grisola. Spotted Fly-catcher.
25. Lanius excubitor. Great Ash Shrike.

26. Lanius Collurio. Rufous-backed Shrike.
27. ——— rutilus. Woodchat.
28. Oriolus Galbula. Golden Oriole.
29. Merula atrata. Blackbird.
30. ——— torquata. Ring Ouzel.
31. ——— iliaca. Redwing.
32. ——— pilaris. Fieldfare.
33. ——— musica. Song Thrush.
34. ——— viscivora. Missel Thrush.
35. Cinclus aquaticus. Water Ouzel.
36. Bombycilla garrula. Chatterer.
37. Saxicola Œnanthe. Wheatear.
38. ——— rubetra. Whinchat.
39. ——— rubicola. Stonechat.
40. Erythica rubecula *Sw.* Robin.
41. Phœnicura. Redstart.
42. ——— (Gould's species.)
43. ——— Suecica. Blue-breasted Warbler.
44. Philomela Luscinia *Sw.* Nightingale.
45. ——— atricapilla. Blackcap.
46. ——— hortensis. Greater Pettichaps.
47. ——— Hippolais. Lesser Pettichaps.
48. ——— cinerea. Whitethroat.
49. ——— sylviella. Lesser Whitethroat.
50. Curruca salicaria. Sedge Warbler.
51. ——— Locustella. Grasshopper Warbler.
52. ——— arundinacea. Reed Warbler.
53. Sylvia provincialis. Dartford Warbler.
54. ——— Regulus. Gold-crested Warbler.
55. ——— Trochilus. Willow Wren.
56. ——— sylvicola. Wood Wren.
57. Parus major. Great Tit.
58. ——— cæruleus. Blue Tit.
59. ——— palustris. Marsh Tit.
60. ——— ater. Coal Tit.
61. ——— cristatus. Crested Tit.
62. ——— caudatus. Long-tailed Tit.
63. ——— biarmicus. Bearded Tit.
64. Accentor alpinus. Alpine Accentor.
65. ——— modularis. Hedge Accentor.
66. Motacilla alba. Pied Wagtail.
67. ——— boarula. Grey Wagtail.
68. ——— flava. Yellow Wagtail.
69. Anthus pratensis. Titlark.
70. ——— petrosus. Shore Lark.
71. ——— minor. Field Lark.
72. ——— Richardii. Richard's Lark.

Tribe CONIROSTRES. *Conic-billed Birds.*

73. Alauda arborea. Woodlark.
74. ——— arvensis. Skylark.
75. Plectrophanes Lapponica. Lapland Longspur.
76. Emberiza nivalis. Snow Bunting.
77. ——— miliaria. Common Bunting.
78. ——— citrinella. Yellow Hammer.
79. ——— Schœniclus. Reed Bunting.
80. ——— Cirlus. Cirl Bunting.
81. ——— hortulana. Ortolan Bunting.
82. Pyrgita domestica. Common Sparrow.
83. ——— montana. Tree Sparrow.
84. Fringilla cœlebs. Chaffinch.
85. ——— montifringilla. Brambling.
86. Coccothraustes Europæus. Hawfinch.
87. Linaria chloris *Sw.* Green Linnet.
88. ——— Linota. Linnet.
89. ——— cannabina. Great Redpole.
90. ——— minor. Lesser Redpole.
91. ——— montium. Twite Linnet.
92. Carduelis Europæus. Goldfinch.
93. ——— spinus. Siskin.
94. Pyrrhula enucleator. Pine Grosbeak.
95. ——— Europæa. European Bullfinch.
96. Loxia curvirostra. Crossbill.
97. Sturnus vulgaris. Common Starling.
98. Pastor roseus. Rose Pastor.
99. Corvus Corax. Raven.
100. ——— Corone. Crow.
101. ——— frugilegus. Rook.
102. ——— Cornix. Hooded Crow.
103. ——— Monedula. Jackdaw.
104. ——— Pica. Magpie.
105. Nucifraga Europæa. Nutcracker.
106. Garrulus glandarius. Magpie.

Tribe SCANSORES. *Climbers.*

107. Cuculus canorus. Cuckoo.
108. Dryotomus martius *Sw.* Black Woodpecker.
109. Dendrocopus major *Sw.* Greater Spotted Woodpecker.
110. ——— minor *Sw.* Lesser Spotted Woodpecker.
111. Chrysoptilus viridis *Sw.* Green Woodpecker.
112. Yunx Torquilla. Wryneck.
113. Sitta Europæa. Nuthatch.
114. Certhia familiaris. Common Creeper.
115. Troglodytes Europæus. Wren.

Tribe TENUIROSTRES. *Suctorial Birds.*

116. Upupa Epops. Hoopoe.

Tribe Fissirostres. *Wide-mouthed Birds.*

117. Merops apiaster. European Bee-eater.
118. Alcedo ispida. Kingfisher.
119. Hirundo rustica. Swallow.
120. Hirundo urbica. Martin.
121. ——— riparia. Sand Martin.
122. Cypselus murarius. Swift.
123. Caprimulgus Europæus. Nightjar. Fern Owl.

Order III. Rasores. *Gallinaceous Birds.*

124. Columba Œnas. Stockdove.
125. ——— Livia. Rock Pigeon.
126. ——— Palumbus. Wood Pigeon.
127. ——— Turtur. Turtle Dove.
128. Lagopus Scoticus. Red Grouse.
129. ——— Ptarmigan.
130. Lyrurus Tetrix *Sw.* Black Grouse.
131. Perdix cinerea. Common Partridge.
132. Perdix rufa. Red-legged Partridge.
133. Coturnix Europæus. Quail.
134. Otis tarda. Great Bustard.
135. ——— Tetrax. Little Bustard.
136. Œdicnemus crepitans. Thick-kneed Bustard.
137. Cursorius Isabellinus. Cream-coloured Plover.

Order IV. Grallatores. *Wading Birds.*

138. Platalea leucorodia. White Spoonbill.
139. Ciconia Europæa. Common Crane.
140. ——— alba. White Stork.
141. ——— nigra. Black Stork.
142. Ardea major. Common Heron.
143. ——— alba. Great White Heron.
144. ——— Gazetta. Egret.
145. ——— æquinoctialis. Little White Heron.
146. ——— Nycticorax. Night Heron.
147. ——— Caspica. African or Purple Heron.
148. Butor stellaris. Common Bittern.
149. ——— comata. Squacco Heron.
150. ——— minuta. Little Bittern.
151. Tantalus igneus. Glossy Ibis.
152. Numenius arquata. Curlew.
153. ——— Phæopus. Whimbrel.
154. Rusticola Europæa. Woodcock.
155. Scolopax major. Great Snipe.
156. ——— Sabini. Sabine's Snipe.
157. ——— Gallinago. Common Snipe.
158. ——— Gallinula. Jack Snipe.
159. ——— grisea. Brown Snipe.
160. Limosa ægocephala. Bartailed Godwit.
161. ——— melanura. Blacktailed Godwit.
162. Tringa canutus. Knot.
163. ——— maritima. Purple Sandpiper.
164. ——— pygmæa. Pygmy Sandpiper.
165. ——— rufescens. Buff-breasted Sandpiper.
166. ——— alpina. Purre.
167. ——— pusilla. Little Sandpiper.
168. ——— Temminckii. Temminck's Sandpiper.
169. ——— pugnax. Ruffe.
170. Totanis glottus. Greenshank.
171. ——— fuscus. Spotted Redshank.
172. ——— calidris. Redshank.
173. ——— ochropus. Green Sandpiper.
174. ——— glareola. Wood Sandpiper.
175. ——— macularius. Spotted Sandpiper.
176. ——— hypoleucas. Common Sandpiper.
177. Strepsilas collaris Turnstone.
178. Vanellas cristatus. Lapwing.
179. ——— melanogaster. Grey Lapwing.
180. ——— Calidris arenaria. Sanderling.
181. Charadrius pluvialis. Golden Plover.
182. ——— morinellus. Dottrel.
183. ——— hiaticula. Ring Plover.
184. ——— Cantiana. Kentish Plover.
185. Himantopus melanopterous. Long-legged Plover.
186. Recurvirostra Avocetta. Avoset.
187. Hæmatopus Ostralegus. Oyster-catcher.
188. Rallus aquaticus. Water Rail.
189. Gallinula crex. Landrail.
190. ——— chloropus. Waterhen.
191. ——— Porzana. Spotted Water-hen.
192. ——— Baillonii. Little Gallinule.
193. ——— pusilla. Olivaceous Gallinule.
194. Phalaropus hyperboreus. Red Phalarope.
195. ——— lobatus. Grey Phalarope.
196. Fulica atra. Common Coot.

Order V. NATATORES. *Swimming Birds.*

197. Boschas domestica *Sw.* Wild Duck.
198. ——— creoca *Sw.* Teal.
199. ——— querquedula *Sw.* Garganey.
200. ——— bimaculata *Sw.* Bimaculated Teal.
201. Anas clypeata *L.* Shoveller.
202. Chauliodes Strepera *Sw.* Gadwall.
203. Dafila caudacuta *Leach.* Pintail.
204. Tadorna Europæa. Sheldrake.
205. ——— rutila *Steph.* Ruddy Sheldrake.
206. Macera Penelope *Selby.* Common Widgeon.
207. Somateria mollissima *Leach.* Eider.
208. ——— spectabilis. King Eider.
209. Oidemia fusca. Velvet Scoter.
210. ——— perspicillata. Surf Scoter.
211. Fuligula ferina. Red-headed Pochard.
212. ——— rufina. Red-crested Pochard.
213. ——— nyroca. White-eyed Pochard.
214. ——— marila. Scoup Pochard.
215. ——— cristata. Tufted Pochard.
216. ——— dispar. Western Pochard.
217. Harelda glacialis. Long-tailed Duck.
218. Clangula vulgaris. Golden-eye.
219. ——— histrionica. Harlequin Golden-eye.
220. Mergus merganser. Gooseander.
221. ——— serrator. Red-breasted Merganser.
222. ——— cucullatus. Hooded Merganser.
223. ——— albellus. Smew.
224. Anser palustris. Greylag Goose.
225. ——— ferus. Bean Goose.
226. ——— erythropus. White-fronted Goose.
227. ——— leucopsis. Barnacle Goose.
228. ——— bernicla. Brent Goose.
229. ——— ruficollis. Red-breasted Goose.
230. Cygnus ferus. Whistling Swan.
231. ——— Bewickii. Bewick's Swan.
232. Podiceps cristatus. Crested Grebe.
233. ——— rubicollis. Red-necked Grebe.
234. ——— cornutus. Sclavonian Grebe.
235. Podiceps auritus. Eared Grebe.
236. ——— minor. Little Grebe.
237. Colymbus glacialis. Great Diver.
238. ——— arcticus. Black-throated Diver.
239. ——— septentrionalis. Red Diver.
240. Uria Troile. Foolish Guillemot.
241. ——— Grylle. Black Guillemot.
242. Mergulus melanoleucos. Common Rotche *Selby.*
243. Alca impennis. Great Auk.
244. ——— Torda. Razorbill Auk.
245. Mormon arctica *Illiger.* Common Puffin.
246. Carbo cormoranus. Common Cormorant.
247. ——— cristatus. Crested Shag.
248. Sula Bassana. Solan Gannet.
249. Sterna Caspica. Caspian Tern.
250. ——— Boysii. Sandwich Tern.
251. ——— Hirundo. Common Tern.
252. ——— Dougallii. Roseate Tern.
253. ——— arctica. Arctic Tern.
254. ——— minuta. Lesser Tern.
255. ——— nigra. Black Tern.
256. ——— anglica. Gull-billed Tern.
257. Larus minutus. Little Gull.
258. ——— ridibundus. Laughing Gull.
259. ——— canus. Grey or Common Gull.
260. ——— rissa. Kittiwake Gull.
261. ——— eburneus. Ivory Gull.
262. ——— glaucus. Glaucous Gull.
263. ——— Islandicus. Iceland Gull.
264. ——— argentatus. Herring Gull.
265. ——— marinus. Great Black-backed Gull.
266. ——— fuscus. Lesser Black-backed Gull.
267. Lestris Cataractes. Common Black-bearded Jager.
268. ——— pomarinus. Pomarine Jager.
269. ——— parasiticus. Arctic Jager.
270. Procellaria glacialis. Fulmar Petrel.
271. ——— Puffinus. Cinereous Puffin.
272. ——— Anglorum. Manx Puffin.
273. Thalassidroma pelagica *Vig.* Common Storm Petrel.
274. ——— Leachii. Leach's Storm Petrel.

No less than 274 species of birds are thus seen to be natives, or visiters, of Britain, putting aside several others that have been occasionally seen as stragglers, but which properly belong to the fauna of America. If we separate these into groups, according to the nature of their food, we shall have some curious results. First, there are 22 large and 3 small-sized rapacious species, or such as feed not only upon small quadrupeds, but also upon other birds. We should add to these, also, the cuckoo; because, although it does not actually kill and eat, as do hawks, owls, and shrikes, yet it obviously destroys, and materially checks, the increase of the smaller birds, by its extraordinary habit of dispossessing them of their legitimate offspring, and substituting its own. We shall thus have one rapacious species for ten that are not, and whose food consists of insects, seeds, or fishes. The land and water birds (considering the waders as coming under the latter denomination), in point of species are nearly equal, there being 137 of the former, and 136 of the latter. This equality is never found but in the ornithology of moderate-sized islands, where the extent of coast is very great, and the land is not so near to the adjacent continent as to permit the free passage of the ordinary perching birds. In all this there is a beautiful harmony, the shores of every region being peopled with their proportionate number of feathered inhabitants, and producing for their use, by the rise and ebb of the tides, a constant and varied supply of food in the shape of marine animals. On looking, again, to those which inhabit the land, we find that out of 137, only 14 feed exclusively upon berries and seeds. This, certainly, appears, at first sight, an unequal and an unnatural proportion; seeing that our woods, hedges, and fields supply such quantities of berries, seeds, and grain. But this plentiful supply of vegetable food is not produced by nature in vain, nor is it left to useless decay. Those birds, stationary in our island, which, during summer, thin the ranks of the insect world, would perish in winter from sheer hunger, had they not, at that inhospitable season, an appetite for vegetable rather than for animal food. We accordingly find that, so soon as autumn approaches, and insects become scarce, blackbirds, thrushes, and various other perchers, sustain themselves during winter on the hips and haws of our hedges, and the innumerable seeds, left on the fallow lands and on hedge-banks; the crow genus alone, by their powerful bills, being able to break the half-frozen ground, and search for insects concealed beneath its surface. It must be remembered, also, that although the finch tribe are insectivorous, yet that, during winter, their chief, if not only, food consists of seeds; and that even other stationary birds, especially adapted, by their structure, for insect destroyers, nevertheless comfortably subsist, during winter, upon the produce of the vegetable world; the robin and the hedge-sparrow are striking examples of this fact; both are truly insectivorous; but, not being migratory, they subsist, during the colder months, on minute seeds and small berries. We have said, that England is both naturally and artificially a peculiarly woody country, and the same may be said of several other parts of Europe. With this fact before us, how comes it that we have so very few of that family of birds, especially adapted, both from their structure and economy, to live among trees, namely, the woodpeckers? Eight only are found in the whole of

Europe, four (or rather, perhaps, three) of which belong to our existing list. To answer this question satisfactorily, we must look, not to the *habitation*, but to the peculiar food, of these birds. The majority of the woodpeckers feed on the larvæ or adults of such insects as live on the wood of trees and perforate its substance. These woodborers are chiefly of the natural tribe of the Capricornes, or long-horned beetles; a tribe which, however abundant in tropical regions, are very scantily distributed in temperate latitudes, and are very rare in Europe. It is, then, clearly, not enough for woodpeckers that they should have plenty of forest range, but that the trees composing such forests should produce a sufficient supply of food for them. The scarcity of this food in Europe, and more especially in Britain, at once accounts for the paucity of our woodpeckers, one species of which (the great black woodpecker) is almost extinct, while another feeds both upon fruits and ants; thus reducing our actual efficient number to two, and these very small. The number of our capricorn beetles, however, is quite in proportion to their particular enemies. But in no department of our fauna is the harmony of nature's laws more conspicuous than in the economy of the purely insectivorous birds, composing the genera Saxicola, Phœnicura, Philomele, Lanius, Curruca, Sylvia, Musicapa, Hirundo, and Caprimulgus. The major part of these are summer visiters, coming to these islands for the purpose of breeding, and quitting them in the autumn. They comprise between 27 and 30 species, and, as more than half are common, they must amount, collectively, to many hundreds of thousands. The number of insects which such a countless host must daily require for their subsistence is almost beyond belief: some idea, however, may be formed by supposing that each bird, upon an average, captures 150 insects a day, or about 14 an hour; a number, we are persuaded, much lower than the reality. 100,000 birds would thus require a daily supply of 15,000,000 insects! But these hosts of little birds do not come at once, or in immense divisions; for that would obviously be inconsistent with the progressive appearance of the different insects. Each species, therefore, chooses its own time, and its own route: as the advancing summer warms into life new tribes of insects, so do other parties of summer birds arrive, and these detachments continue to come, until the whole country has poured forth its insect inhabitants, and there is an abundant supply both for our residents and our visiters. Hence we see that, in a country like Britain, destined to be the nursery of such an immense assemblage of insectivorous birds, it is absolutely essential that there should be a vast insect population to supply the requisite demand for food: while, as the great majority of these insects live upon vegetables, it is equally essential that Great Britain should be a verdant and well-wooded country. Were it otherwise, — were our fields, as on the Continent, void of hedges, and the face of the country turned into open plains, — few insects would be found, and our summer insectivorous birds would either starve, or the major part would leave us for more productive countries. A few years would see their numbers greatly diminished, and, perhaps, several species would thus be almost driven from our coast. We were particularly struck with the truth of these remarks while travelling from Calais to Paris, a tract of country well known to many who, we feel assured, will bear us out in what we have said on this subject. During the whole of this journey, we did not see, at the very most, more than 20 birds, including 2 or 3 crows, and about as many hawks. While, if there had been more, there was scarcely a tree, thicket, or hedge to shelter them: the inference, therefore, is obvious. On the other hand, let any one traverse the same extent of country in Britain, along our thick hedged and often shady roads, and we question not but that he will count 20 species of birds in a single hour! It is quite immaterial to the present question, whether this remarkable inequality, in the distribution of birds, in the two countries, have originated in artificial causes. Man, indeed, may change the face of nature, but he has no control whatever over the effects which attend those changes he may occasion. He cannot clear a country of wood, and yet retain all its brute inhabitants: and, if he destroy trees, he annihilates also the insects which feed upon their leaves, and scares away the birds which sheltered themselves in their branches. There are some instances worth adverting to of these changes in the distribution of our native birds. The fens of Lincolnshire were formerly the most extensive breeding-places, for water fowl, of any in Europe, and the capture of these birds, especially of wild ducks, gave a large annual revenue to the proprietors: these wastes, however, have of late years been very considerably drained and cultivated: the birds have consequently deserted them, and probably not a tenth part of the number formerly captured are now procured. At no remote period the Manx puffin (Procellaria Puffinus *Lath*) resorted in great numbers to the Calf of Man, a small islet to the south of the main island, and only divided from it by a narrow channel. At present, however, the bird is entirely unknown in that part. It was supposed to have been driven from this favourite haunt by the too great destruction of its young. These were held in considerable estimation; and Pennant mentions that, in his day, great numbers of them were taken every year by the person who farmed the islet. It appears, however, that rats, that had escaped from a vessel accidentally wrecked on the coast, were the real exterminators of the birds.— (*Quayle's Survey of the Isle of Man*, p. 8.)

We must now pass on to other portions of our animal population. We are unable, from want of space, to enter upon many interesting details regarding the fishes and fisheries of Britain; but we regret this the less, as the practical details as to the fisheries will be given in a subsequent part of this work. Whales were, no doubt, much more frequent upon our northern coasts, formerly, than now: for, in these days, the appearance of a solitary straggler is considered a remarkable occurrence. There is reason to believe, also, that our pilchard fishery, one of the most valuable we possess, is less productive than formerly. In the History of Cornwall, by Dr. Borlase, we have the following account of the state of this fishery in 1768:—

"It employs a great number of men on the sea, training them thereby to naval affairs; employs men, women, and children, at land, in salting, pressing, washing, and cleansing, in making boats, nets, ropes, casks, and all trades depending on their construction and sale. The poor are fed with the offals of the captures, the land with the refuse of the fish and salt; the merchant finds the gains of commission and honest commerce, the fishermen the gains of the fish. Ships are often freighted hither with salt, and into foreign countries with the fish, carrying off, at the same time, part of our tin. The usual number of hogsheads exported each year, for 10 years, from 1747 to 1756, inclusive, from the 4 ports of Fowey, Falmouth, Penzance, and St. Ives, may be thus stated: — Fowey, 1,732 hogsheads; Falmouth, 14,631⅔; Penzance and Mount's Bay, 12,149⅓; St. Ives, 1282, — in all 29,795 hogsheads. Every hogshead, for 10 years last past, together with the bounty allowed for each hogshead exported, and the oil made out of each hogshead, has amounted, one year with another, at an average, to the price of 1*l.* 13*s.* 3*d.*; so that the cash paid for pilchards exported has, at a medium, annually amounted to the sum of 49,532*l.* 10*s.*" (For an account of the present state of the pilchard fishery, see article on Fisheries.)

We cannot, in this place, entirely pass over the herring, one of the most abundant and savoury of our native fishes. The herring fishery is of great antiquity: the Dutch appear to have been the first nation who engaged in it, about the year 1164; and it continued in their possession for several centuries. At length, however, its value became so apparent, that it gave rise to much contention between them and the English. There is a curious item in the town charter of Yarmouth, long famous for its herring fair. The burgesses are obliged to send to the sheriffs of Norwich 100 herrings, to be made into 24 pies; and these pies are to be delivered to the lord of the manor of East Carleton, who is to convey them to the king. The receipt for making herring-pie would be a curious, though perhaps not a valuable, addition to our modern cookery books: it is probably lost; unless, indeed, her majesty continue to receive these once prized patties. We must pass over the salmon fisheries, chiefly confined to the north; and merely remark that few islands in this hemisphere have so varied and plentiful a supply of fish as Great Britain. The total number of species, both sea and freshwater, amounts to upwards of 170.

In the order of Reptiles, our islands are fortunately very deficient. The hawksbill turtle has occasionally been found wandering near our northern coasts, and two instances of the coriaceous turtle having been caught on the western shores are recorded by Borlase. Of the more elegant family of lizards, one species only, the Lacerta agilis, is admitted by some authors; others, like Ray, consider that under this name are included four or five distinct species (see *Linn Tr.* vol. v. p. 49.), a supposition much more probable than the first. These little creatures, however, are so rare, that we never remember to have seen a single individual. The efts, on the contrary, are common: two species inhabit our clear ponds, where they may be seen swimming about in summer, while the other is strictly terrestrial, and is met with at the roots of thick rank weeds, growing on the side of walls, or among rubbish.

The only Serpents are, — 1. the common snake; 2. the viper;

3. the blindworm; and, 4. the Dumfries snake of Sowerby. The first is harmless, and never exceeds 4 feet in length. Although habitually inhabiting the land, it sometimes enters the water, and swims with facility. We remember to have read of two or three instances where snakes have been found crossing an arm of the sea on the coast of Wales. Considering its fecundity (for it lays from 10 to 20 eggs), it is surprising that the snake is not more frequent; but it has a deadly enemy in the hedgehog, which, as the recent experiments of Professor Buckland have clearly proved, feeds upon this reptile: thus establishing by fact, what we should have argued from theory, that as the hedgehog, in its own tribe, represents the real hog in the order of Ungulata, so there should be some striking point of agreement between them. The Dumfries snake is very small, and is probably the same species as the Coluber Austriacus of the Continent. The viper is the only animal whose bite is poisonous: there are three or four prominent varieties, which some have considered different species; but Dr. Leach (*Nat. Mis.*) seems to view them but as one. Lastly, the Anguis fragilis, or blindworm, is also of rare occurrence, and probably derives its name from the smallness of its eyes: the body is greyish, with two dark brown stripes upon the back; the belly also is brown; and the usual length of the animal is a foot. Of the batracian reptiles, or true Amphibia, our list is equally scanty, comprising only the frog, toad, and natterjack: all these are perfectly harmless, useful in the economy of nature, and serviceable even to man: they feed upon slugs, worms, and insects, and, instead of being despised and persecuted, should be protected and encouraged both by the agriculturist and the gardener. We recommend to those who have such an abhorrence of toads as not to "endure" their sight, to read that most interesting and amusing account given by Pennant (*Brit. Zool.* vol. iii. Appendix) of a tame one: and we think they will rise from the perusal with a diminution, at least, of their absurd prejudices.

Considering the northerly situation of these islands, the number of marine shell-fish found on our coasts is considerable, though much inferior, in size and variety, to those of the warm shores of the Mediterranean. There are few of any size or beauty, except, indeed, the Pectens, whose vivid and varied colours equal those of any country in the world. The orange-mouthed Whelk is the largest univalve or spiral species; and the great Pecten is the largest bivalve, being much superior to the common oyster. This latter, indeed, is the most important and delicious shell-fish we possess. In antiquity Britain was so celebrated for oysters, that they were sent to Rome; a fact attested by more than one of the Roman poets: the epicures of the imperial city had their layers or stews for oysters, as we have at present in the open sea. According to Pliny, the oyster reservoirs were first made by Sergius Orata, not for the gratification of his own palate, but as a most lucrative speculation, by which he realised large profits. The ancients ate oysters, as we do, either raw or roasted; but they had also a way of stewing them with mallows and docks, and sometimes with fish. There is a curious account of the treatment of oysters in Sprat's History of the

Royal Society, an abstract of which may be found in Pennant's British Zoology. About 1776, the oysters of Colchester and Rochester were the most famous, and a great part of the inhabitants of the latter place were concerned in or supported by this fishery, which was conducted by a company of free dredgers, established by prescription, but subject to the authority and government of the mayor and citizens. This was better defined and confirmed by an act of parliament passed in 1729. The mayor holds a court of admiralty every year, when all necessary regulations for this valuable fishery are made. All persons catching oysters, not duly authorised, are liable to a penalty. Great quantities of these oysters are sent not only to London, but to Holland, Germany, and other parts of the Continent. It may surprise some of our readers to be informed that Britain, in ancient days, was famous for another sort of fishery, namely, that of Pearls. There is a large-sized mussel (Unio margaritifera), a dirty-black on the outside, but of a beautiful pearly lustre within, still found in some of our rapid rivers, and which produces pearls of no inconsiderable beauty. Why the regular fisheries which once existed for this native gem have been abandoned we do not know, but that considerable quantities were so obtained is beyond a doubt. Sixteen, as affirmed by Pennant, have been found in a single shell. These British pearls were well known to the Romans, who, nevertheless, complained that they were small and ill-coloured. It seems, however, that Sir Richard Wynn, chamberlain to the Queen of Charles II., presented her majesty with a pearl, taken from the river Conway, which, it is affirmed, is still honoured with a place in the regal crown. In the sixteenth century, several of great size were fished from the Irish rivers. One that weighed 36 carats was valued at 40*l.*, and other single pearls were sold from 4*l.* 10*s.* up to 10*l.* This last was disposed of a second time to Lady Glenlealy, who put it into a necklace, and refused 80*l.* for it from the Duchess of Ormond. — (*Phil. Trans. Abr.* ii. 831.) The total number of marine, freshwater, and land Testacea may be estimated at from 430 to 450 species, omitting such families of true mollusca as are destitute of shells.

In the radiated class of animals, (so named from having their mouth in the centre of their body) are the star-fish, the sea-egg, and the medusa. There is nothing in their history to interest the general reader: they are all marine, or rather pelagic, animals, wandering about in the trackless ocean, or lying buried in its deep recesses. It is only when the sea has been violently agitated, so as to cast upon the beach some of its strange and slimy inhabitants, that ordinary observers behold, perhaps for the first time, some of those singular and incomprehensible forms which Infinite Power has created for life and enjoyment, and has placed in an element whose vast recesses will remain for ever hidden from human search. Allied to these Radiata are the naked Cephalopoda, or Cuttlefish, of which seven species are enumerated as indigenous to our seas. The most common of these is the Sepia officinalis, whose internal plate, or bone, we remember to have found, when a boy, in the greatest profusion, on the shores of Hampshire, near Christchurch and Hurst Castle.

It is this substance which supplies the scribe with pounce; and is know in the chemists' shops under the name of cuttle-bone. There are a great variety of small corallines, but those of a more imposing size and beauty must be sought for in warmer seas.

The Entomology of Great Britain is highly interesting in itself, and important to our present purpose, as illustrating those general remarks already made on our climate and vegetation. No branch of our natural history has been more successfully investigated as to the species, and the valuable *Systematic Catalogue* of Mr. Stephens affords the means of drawing some general results of an interesting and novel nature. Looking to the entomology of these islands as a whole, it exhibits all those prominent characteristics which mark the entomological features of Europe as opposed to those of temperate America and of Northern Asia. The Apterous insects (under which term we include with Linnæus, the spiders, crabs, and acari) bear nearly the same proportion to the Ptilota, or winged orders, as in other parts of the world. Yet there is, perhaps, a greater preponderance in the number of spiders than even in the South of Europe, and certainly much greater than in the fauna of tropical America. Now this is accounted for by a singular fact, not hitherto mentioned. The whole of Europe may be considered the chief metropolis of the Diptera, or flies. Britain participates in this abundance; for no less than 1,670 species have been detected; while, during three years' researches in tropical America, we may safely affirm that not a sixteenth part of this number was discovered. Flies are the natural food of spiders, more than any other order; and while nature has given us an abundance of the one, she has likewise proportioned her supply of food in the other. A further reason for this abundance of Diptera will be found in the great number of our summer insectivorous birds, but more especially of swallows, whose food is almost exclusively supplied by dipterous insects. It seems singular that the Mellivorous Hymenoptera, or the bees, are more abundantly distributed, in point of numbers, in temperate than in tropical countries, seeing that in the latter there is greater scope for them in the sweets of the vegetable kingdom. Yet this is undoubtedly the fact. On the other hand, it should be remembered, that no flowers in tropical America are spread over such a vast surface as that occupied by the thousands of acres of *clover*, cultivated in our island; setting aside the great variety of other plants found in a wild state. But, although bees are so numerous in Europe, South America has a much greater preponderance of rapacious Hymenoptera, particularly those of the Vespidæ and Sphegidæ, two families which abound in warm latitudes, although comparatively scarce in Britain. The total number of Hymenopterous insects may be reckoned, in even numbers, at 2,100 species. The most splendid family of these is Crysis, called rubytails by the collectors, of which no less than 35 supposed species are enumerated in the above-mentioned list, while only 3 have yet been discovered throughout the whole of Brazil. The group, in fact, is chiefly European. In the Hemipterous order (divided, in the modern systems, into two artificial orders), the majority of species are small, and neither remarkable for elegance nor singularity. Several genera are peculiar to Europe; they chiefly consist of insects which live among those tall meadow grasses, found only in Britain and other pasture countries. The plant-sucking Aphides are in great variety and abundance: they constitute one of the most prominent features of our Entomology; for not a single species is to be met with in tropical America. The musical Cicades on the other hand, which love the warmth, and bask in the rays, of an Italian sky, are almost unknown in Britain, one solitary species only having been found, though very rarely, in the New Forest. The lesser tribes, however, are very numerous, and fly in profusion, during summer, from every hedge. Next come the Lepidoptera, comprising the butterflies, hawk-moths, and moths. In the first of these tribes we have many most beautiful species, but not more than one or two which are peculiar to Britain. Authors have swelled the list of our native butterflies to nearly 100, but several of these rest on very dubious authority. The most typical of this tribe have their metropolis in hot latitudes, and are merely represented in Britain by a single species, the European swallowtail (Podalirius Machaon *Sw.*); but among the brush-footed division there are few exotic species which surpass the splendid Vanessa Io (the peacock butterfly), the Vanessa Antiopa (Camberwell beauty), or the V. Atalanta (the Admiral), the first and last being among the most common of our insects. The meadow brown butterflies (Satyridæ *Sw.*) are seen in profusion in the fields and along the hedges, while our pastures are enlivened by numerous little azure butterflies, forming the genus Polyommatus, and of which few or none are found in other parts beyond Europe. In the Hesperian tribe (Hesperidæ), on the contrary, we can count only six or seven native species, while in Brazil alone we discovered nearly 250. The hawkmoths of Britain are few, and the larger species are scarce. The type of this remarkable tribe is the death's-head (Sphinx Atropos *L. Sw.*), the largest, in point of bulk, of the British Lepidoptera; but it is rare, and seldom met with, except in particular localities: the Smerinthus ocellatus, or eyed hawkmoth, is perhaps the most beautiful, and is by no means uncommon. To this tribe also belong those elegant dark green and crimson spotted insects, so frequently met with in our pastures during summer, forming the genus Anthrocera, or burnet moths: the geographic distribution of this group, with some slight alterations of structure, extends to America, but that of the clear-winged Ægeria, of which we possess eleven species, is entirely excluded from the warmer latitudes of the New World. One of the most remarkable features in British, no less than in European entomology, is the vast disproportion between the *diurnal* and the *nocturnal* Lepidoptera. Of the former, as already premised, we have scarcely 100 species, while of the latter the catalogue before us enumerates the names of no less than 1,778. True it is, that the smaller families of this tribe are generally overlooked by collectors who visit tropical countries; but it is a very mistaken idea, we believe, that, if such regions were properly investigated, the proportion between their butterflies and moths would be nearly the same as what we find in those of Europe. We cannot, in this slight sketch, enter into very exact numerical calculations; but, after much attention bestowed upon the Lepidoptera of Brazil, we do not believe that our collection of moths exceeds much more than twice the number of the diurnal Papiliones. In the Coleopterous order, the most numerous, perhaps, of the whole of the Ptilota, or winged insects, the number of species detected in Great Britain is truly great. Mr. Stephens's catalogue comprises upwards 3,300 species. It would be highly interesting to trace the means by which nature has provided a sufficient supply of all the various sorts of vegetable food suited to this immense insect (or rather beetle) population: our prescribed limits, however, will oblige us to be very brief. It appears that out of this large number of species, about 550 are of the Cicindelidæ, Harpalidæ, Carabidæ, Dytiscidæ, and other families of rapacious beetles, while nearly all the others live upon vegetables that are either in a living or decayed state. Of the Capricorn, or tree-boring family (Cerambycidæ), there are not more than about 30 species, and very many of these, on better examination, will probably be removed to the floral Capricorns, forming the natural family of Lepturidæ. The weevils (Curculionidæ), on the other hand, are exceedingly numerous, but their size is small, and their colours, with two or three splendid exceptions, dull and sombre. Finally, we should notice the small-sized but beautiful Chrysomelidæ, as being the most resplendent of the British Coleoptera, while the Aphoidæ, the Staphilinidæ, and the Cocinellidæ, are among those geographic groups which more especially belong to Britain. The Linnæan Neuroptera is the only remaining order of the Ptilota we have to notice; and, although not extensive in point of numbers, our country still possesses types of most of the leading families. Great Britain, destitute of any considerable tracts of sand, is without any example of the Myrmelionidæ; yet numbers of the Libellulidæ, or dragon flies, are seen on the sides of our streams, ponds, and rivulets, flitting among the aquatic plants, or soaring in rapid course over the water, in quest of their prey. Of the locust tribe, we only posses four or five species, and these are of a small size, when compared with those whose ravages astonish and distress mankind. Such are the leading peculiarities of the Zoology of Great Britain. Our notices, indeed, have been, from necessity, brief; yet they are not devoid either of popular or scientific interest, while to enter into greater detail would not be altogether suited to a work of this nature. It might, perhaps, be interesting and useful to point out the direct influence which various animals, and more especially insects, exercise on the produce of the agriculturist: this, indeed, opens a wide field for research, and already might supply us with much curious information; but it would be a work of too great extent to find a place here. In the mean time, the curious reader may peruse with advantage the chapters devoted to injurious insects, in Kirby and Spence's Elements of Entomology; while both the gardener and the agriculturist will derive information on the same subject from Mr. Loudon's Encyclopædias of Gardening and Agriculture.

SECT. 11. *Civil Divisions.*

When the Romans invaded England, it was parcelled in unequal portions among a number of petty tribes. A great deal of erudition has been expended, in attempting to define the exact situation and extent of country occupied by each: but a good many of the conclusions that have been come to on this point continue involved in much obscurity; and, though it were otherwise, their statement would be quite foreign to the object of this work.

Roman Provinces. — The divisions of England, by the Romans, varied at different periods of their ascendancy; but under the reign of Constantine, when their empire had been matured and consolidated, they distributed it into 4 provinces; viz.,—1. *Britannia Prima*, the most important and valuable, comprised the whole country south of the Thames and of the Bristol Channel; 2. *Flavia Cæsariensis*, the limits of which are not exactly known, but which includes the middle parts of the kingdom, or those lying between the Humber on the north, the Thames on the south, the Severn on the south-west, and the eastern coast: 3. *Britannia Secunda*, bounded, on the south, west, and north by the Bristol Channel, St. George's Channel, and the Irish Sea, and on the east by the Severn and *Flavia Cæsariensis;* including modern Wales, the counties of Hereford and Monmouth, with the greater part of Warwick, Worcester, Stafford, Salop, and Cheshire. The fourth province, entitled *Maxima Cæsariensis*, comprised the country between the Humber and the Tyne, or rather between the former and the wall of Severus. The province of *Valentia*, formed at a subsequent period, included the county of Northumberland, and the whole of Scotland, as far as the Friths of Forth and Clyde; that is, it included the whole country between the walls of Severus and Antoninus Pius. Besides other considerable towns, several are enumerated where colonies of Roman citizens were established. Of these, *Camulodunum*, now Maldon, in Essex, was one of the principal; and among the others were, *Eboracum*, or York; *Lindûm*, or Lincoln; *Wintonia*, now Winchester; *Cestria*, or Chester; *Sorbiodunum*, afterwards Sarum, in Wilts, now totally decayed, &c. *Londinium*, or London, the modern metropolis of the British empire, and *Verulamium*, near St. Albans, in Hertfordshire, were *municipia*, or free cities, their inhabitants enjoying most of the privileges of Roman citizens. — (*Ancient Universal History*, 8vo ed., vol. xix: pp. 79—116.)

Heptarchy. — During the greater part of the Saxon period, England was divided into a *heptarchy*, or 7 petty kingdoms, among which the country was successively distributed nearly as follows: —

1. Kent comprised Kent.

2. Sussex, or the South Saxons, — Sussex and Surrey.

3. Wessex, or the West Saxons, — Devonshire, Dorset, Somerset, Wilts, Hants, Berks, and part of Cornwall.

4. East Angles, — Norfolk, Suffolk, and Cambridge, including the Isle of Ely,

5. Essex, or the East Saxons,—Essex, Middlesex, and Hertfordshire in part.

6. Northumberland,—Lancashire, Yorkshire, Durham, Cumberland, Westmoreland, Northumberland, and Scotland to the Frith of of Forth.*

7. Mercia,—Gloucester, Hereford, Warwick, Worcester, Leicester, Rutland, Northampton, Lincoln, Huntingdon, Bedford, Buckingham, Oxford, Stafford, Chester, Derby, Salop, Nottingham, and part of Hertford.

The heptarchy may be said to have ceased in 827 or 828, when the whole of England, from the Tyne southwards, was formed into one kingdom, under Egbert, originally king of Wessex. Wales preserved its independence till a considerably later period.

Formation of modern Counties, or Shires, &c.—The present division of England into counties, or shires, is supposed to owe its origin to Alfred. Shire is a Saxon word, signifying a division. Under the Saxons, the shires were governed by an ealderman, or alderman, an appellation that seems to indicate the mature age of those selected to fill this office. After the Danish conquest, the term earl, from the Danish, jarl, was substituted for alderman. County (*comitatus*) is plainly derived from the count (*comes*) of the Franks, who was charged with the same functions as the alderman of the Saxons, and the jarl of the Danes. At first, the government of shires or counties was directly exercised by the earl or count; but this duty he afterwards devolved upon his deputy, a subordinate officer, called in Latin the *vice comes*, and in English the sheriff, shrieve, or shire-reeve. The civil administration has been long wholly in the hands of this officer.

Reeve seems to be synonymous with the Scotch word *grieve*, which is still applied to the manager of a farm or colliery, or to the person who superintends the reapers during harvest.

According to the division of England by Alfred, it contained but 32 counties, Durham and Lancashire being included in York; Cornwall in Devon; Rutland in Northampton; Monmouth was deemed part of Wales; and Northumberland, Westmoreland, and Cumberland were subject to the Scotch.

During the Norman period of our history, there were few alterations of consequence in the geography of England: Cumberland and Westmoreland, indeed, were wrested from the Scotch, but their possession was precarious and uncertain. The provinces north of the Humber, which, after the extinction of the Danish kingdom of Northumbria, preserved for a while a sort of dubious independence, were gradually incorporated with the monarchy; but Northumberland, liable to the inroads and devastations of the Scotch, especially in its northern parts, was still, frequently, a merely nominal part of the kingdom.

The counties of Lancaster, Durham, and Chester, are called counties palatine, *a palatio;* because formerly the owners of these counties, that is, the Duke of Lancaster, the Bishop of Durham, and the Earl of Chester, exercised sovereign power in them, as fully as the king in his palace. They granted pardons for all sorts of offences; appointed judges and justices; all writs ran in their names; and offences were said to be committed against their peace, and not, as elsewhere, against that of the king. Lancaster and Chester have, however, been long held by the crown: but the courts and law officers of the former are still quite distinct; and this also was the case with those of Cheshire, till the passing of the Welsh jurisdiction act of George IV. Durham is the only county palatine that still continues in the hands of a subject. In the 27th of Henry VIII., the prerogatives of the owners of these counties were materially abridged; but all writs continue to be witnessed in their names, and all forfeitures for treason, by the common law, accrue to them.

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* Northumberland is divided by some into two kingdoms, Deira and Bernicia. Mr. Turner, who adopts this division, consistently substitutes the term "octarchy" for heptarchy. — (*History of the Anglo-Saxons*, 5th ed., vol. i. pp. 317. 323, &c.)

The division of Wales into its present counties took place at a comparatively late period. Long, indeed, before the conquest of that country by Edward I., its princes did homage to the crown of England; but that monarch, who may justly be styled the conqueror of Wales, subverted the line of its ancient sovereigns, and conferred the title of Prince of Wales on the eldest son of the King of England. In the 10th of Edward I., it was declared by the statute of Rhudhlan*, that the territory of Wales, with its inhabitants, which had formerly been subject to the king by feudal right, was entirely reannexed to the crown of England, as part of that monarchy. But, notwithstanding this statute, the Welsh retained many of their peculiar laws and customs, particularly their rule of inheritance; viz., that their lands were divided equally among all the issue male, and did not descend to the eldest son. Subsequent statutes still further abridged these provincial immunities. At length the famous statute, 27 Henry VIII. cap. 26., completed the incorporation of Wales with England, by abolishing all the peculiarities of Welsh jurisprudence, at the same time that it admitted the inhabitants to a full participation in all the rights and privileges of Englishmen. It enacts, 1st, That the dominion of Wales shall be for ever united to the kingdom of England; 4dly, That all Welshmen born shall have the same privileges and liberties as other the king's subjects; 3dly, That lands in Wales shall be inheritable according to the English tenures and rules of descent; 4thly, That the laws of England, and no other, shall be used in Wales; besides several other regulations and enactments of inferior importance.

The statute 34 & 35 Henry VIII. cap. 26. confirms the above statute, adds further regulations, and confers some privileges on the Welsh, particularly that there should be courts within the principality itself, independent of the process of Westminster Hall.† But this statute claims our attention, at present, more especially from its having given to the counties of Wales, and the adjoining counties of England, the names and boundaries they still retain. This act divided the marches, or intermediate lands between England and Wales, partly into new counties, and partly annexed them to old counties. The new counties thus formed were, Monmouth, which was declared an English county; with Brecknock, Denbigh, Montgomery, and Radnor, assigned to Wales. Of the English counties, Gloucester, Hereford, and Shropshire were augmented by annexations; of the Welsh, Cardigan, Caermarthen, Glamorgan, Merioneth, and Pembroke.

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* So called from Rhudhlan, or Rhydland, in Flintshire, where it was issued. This, though reckoned among the statutes, was really an act of the king in council. —(*See Barrington on the Statutes*, p. 106.)

† In 1831 the Welsh system of judicature was abolished; the Welsh counties being attached to the Oxford and Western Circuits, according to the convenience of their situations.

Trethings, Trithings, or Tridings, &c.—The next inferior division of the territory of England is into *trethings, trithings,* or *tridings; lathes,* and *rapes.* The former appellation is evidently derived from the circumstance of the county to which it is applied being divided into three parts. These trithings still subsist in the great county of York; where, by an easy corruption, they are denominated ridings. The terms lathes and rapes are of less certain etymology or meaning; but, though not synonymous with trithings, they signify a large division of a county, comprising from 3 to 4 hundreds. Kent is the only county divided into lathes; and Sussex the only one divided into rapes. These had formerly their lathe-reeves and rape-reeves, acting under the sheriff or shire-reeve. The rapes of Sussex were military divisions at the time when Domesday Book was compiled; and the lathes of Kent may have had a similar origin, connected, perhaps, with the Cinque Ports, and for the defence of the coast against invasion. The county of Lincoln is divided into three *districts*, each of which, like the large divisions of Yorkshire, Kent, and Sussex, contains several hundreds. Perhaps, also, the shires, which are found in some of the northern counties, though now merely nominal, were originally larger divisions of a similar nature; as Hallamshire, comprising the district round Sheffield; Richmondshire in the North Riding, and Howdenshire in the East Riding of Yorkshire; Hexamshire and Bamboroughshire, in Northumberland; and Norhamshire and Islandshire, comprising those parts of the county of Durham that lie to the north of Northumberland. Parts of several other counties, as well as Durham, lie detached; this is very remarkably the case with Worcester.

Hundreds.—The next inferior division is that of hundreds. This division seems rather to have been introduced into England, than invented in it; and there is reason to believe that the Saxons, in the southern part of the island, were the first to establish it. This institution, like all those of the Saxon period, which relate to the due administration of justice, has generally been ascribed to Alfred. But a similar division had been established in France 200 years before his era; "and, indeed," says Mr. Justice Blackstone, "something like this institution of hundreds may be traced back as far as the ancient Germans, from whom were derived both the Franks, who became masters of Gaul, and the Saxons, who settled in England; for both the thing and the name, as a territorial assemblage of persons, from which afterwards the territory itself might probably receive its denomination, were well known to that warlike people. *Centeni ex* *singulis pagis sunt, idque ipsum inter suos vocantur; et quod primus numerus fuit, jam nomen et honor est.* — Tacit. De Moribus German. 6." — (*Commentaries, Introd.* § 4.)

It is uncertain whether the appellation of hundreds was given to these divisions because they contained 100 (which in Saxon numeation means 120) persons, 100 heads of families, or, as some suppose 100 farms. It is, however, most probable that each hundred contained 100 (120) heads of families of freemen. That the hundreds were regulated by population, is evident from the great number of hundreds in the counties that were first peopled by the Saxons; or which, from their local situation, were least exposed to the devastation of war; or, from their natural fertility, were most likely to attract, and most capable of supporting, a great number of inhabitants; while, on the contrary, the counties gained by the Saxons at a later period, which were held by them on a precarious tenure, and continually liable to invasion, or which were naturally uninviting, contain comparatively very few hundreds. Thus, according to Domesday Book, there were in Kent and Sussex, at the period when that survey took place, respectively, 62 and 64 hundreds, the numbers they contain at present. Norfolk, though only about the fifth county in the kingdom in point of extent, contains 660 parishes (a greater number than any other county), and 33 hundreds. Suffolk contains 575 parishes, and 21 hundreds; Essex 415 parishes, and 20 hundreds: whereas, in Lancashire, there are only 6 hundreds; in Cheshire, 7; in Cornwall, 9; in Northumberland, 7 divisions, which correspond to hundreds; and in Cumberland, 5. In some counties there are hundreds that do not exceed a square mile in area, nor contain more than 1000 persons. The hundreds of Lancashire, on the contrary, average 300 square miles, and the population of one of them, Salford hundred (including Manchester), amounted, in 1831, to 612,414! The population of the hundred of West Derby (including Liverpool) was, at the same time, 380,078.

This striking irregularity seems to have been felt as an inconvenience as early as the reign of Henry VIII., when the smaller hundreds were, in some instances, united, and the larger hundreds partitioned into districts, called *divisions*, *limits*, or *circuits*. These divisions still exist, more or less manifestly, in most of the English counties, and have been recognised in subsequent acts relating to the poor. Formerly a court was regularly held in each hundred, for the trial of causes; but this has now fallen into disuse.

Wards and Wapentakes. — In the northern parts of England, the counties were not divided into hundreds, but into wards and wapentakes: Cumberland, Westmoreland, Northumberland, and Durham continue to be divided into the former, and Yorkshire into the latter. Wards are so called from the inhabitants being obliged to keep watch or ward against the irruptions of the Scotch or Picts. The term wapentake is evidently synonymous with weapontake, and was given to the divisions of Yorkshire from the same circumstance.

Tithings.—The subdivision of hundreds into tithings is undoubtedly owing to Alfred. "In ancient times it was ordained, for the sure keeping of the peace, that all freeborn men should cast themselves into several companies, by 10 in each company; and that every one of these 10 men should be surety and pledge for the forthcoming of his fellows: for which cause these companies, in some places, were called tithings; and as 10 times 10 make 100, so, because it was also appointed that 10 of these tithings should meet together for matters of greater weight, therefore that general assembly was called a hundred." One of the principal inhabitants of the tithing, who was called the tithingman, or headborough, and in some counties the borsholder, or boroughs-ealder, was annually appointed to preside over the rest, and to take care of their interests. Tithings are seldom mentioned now, except in legal proceedings, or in topographical descriptions.

Sokes. — In Lincolnshire another species of division exists, called *sokes*. *Soke*, *sok*, *soc*, or *soka*, according to Bracton, signifies "the power of administering justice; and the territory or precinct in which the chief lord did exercise his soke, that is, his liberty of keeping court, or holding trials within his own soke or jurisdiction."

Parishes. — Although parishes were originally ecclesiastical divisions, they may now be more properly considered as coming under the class of civil divisions; and, consequently, claim our attention under this head. It is not easy to determine the æra of the division of England into parishes; they are mentioned in the laws of King Edgar so early as 970, when the whole kingdom seems to have been divided into parishes; but it is probable that the division was not made at once, but by degrees. It is, according to Blackstone, pretty clear and certain that the boundaries of parishes were originally ascertained by those of manors; for it very seldom happens that a manor extends itself over more parishes than one, though there are often many manors in one parish. The parochial division of England was nearly the same in the reign of Edward I. (1272—1307) as at present.

Parishes are frequently intermixed with one another. This seems to have arisen from the lord of the manor having had a parcel of land detached from the main part of his estate, but not sufficient to form a parish of itself. It was natural for him to endow the church which he had erected upon his principal estate with the tithes of these disjointed lands; especially if it happened that there was no church in any lordship adjoining to them.

The boundaries of parishes depend on immemorial custom; but it is probable that they were not settled with very minute precision till the introduction of the poor laws, when, in consequence of the claim for relief upon their particular parishes given to the poor, it became a matter of consequence to define exactly the limits of each parish. They cannot now be altered but by legislative enactment.

In the northern counties, where the parishes sometimes embrace 30 or 40 square miles, the poor laws, the due administration of which must always depend on an intimate knowledge of the situation and character of every one applying for relief, could not be properly carried into effect. To remedy this inconvenience, an act was passed in the 13th of Charles II. permitting townships and villages, though not entire parishes, severally and distinctly to maintain their own poor. Hence townships in the north of England may be regarded as divisions, subordinate to parishes; and are, in practice, as distinctly limited as if they were separate parishes.

Towns originally contained but one parish; but, from the increase of inhabitants, many of them are now divided into several parishes.

Besides parishes, or townships, there are places which are deemed extra-parochial, or not within the limits of any parish. These were formerly the site of religious houses, or of castles, the owners of which would not permit any interference with their rights. At present they enjoy some most valuable privileges; among others, a virtual exemption from the poor's rate, because there is no overseer on whom the order of a magistrate may be served — from the militia laws, because there is no constable to make the return — and from repairing the highways, because there is no surveyor. Their tithes are, by immemorial custom, payable to the king instead of the bishop. The number of such places is not inconsiderable, amounting to more than 200. It seems highly inexpedient that any part of the country should enjoy such an exemption from burdens imposed for the benefit of the community. Extra-parochial wastes and marsh lands, when improved and drained, are assessed to all parochial rates in the parish next adjoining. In some counties, *liberties* interrupt the general course of law as affecting hundreds, in the same manner as extra-parochial places do with regard to parishes. This inconvenience is particularly felt in Dorsetshire. The number of parishes and parochial chapelries in England and Wales is not exactly ascertained; but there are not many doubtful cases, and, for any general purpose, they may safely be taken at 10,700. About 550 parishes extend into two counties, or into more than one hundred or other divisions. — (*Blackstone's Commentaries*, Introd. § 4.; and *Preliminary Remarks to Census of* 1831, pp. 14—18.)

Towns. — Under the general term *town* is now comprehended cities, boroughs, and common towns. A city is a town incorporated; which is, or has been, the see of a bishop: and, though the bishopric be dissolved, as at Westminster, it still remains a city. A borough is now understood to be a town, whether corporate or not, that sends burgesses to parliament. There are an immense number of other towns, which are neither cities nor boroughs; some of them having the privilege of markets, and others not. Several of these have small appendages, called *hamlets*, which are supposed by Spelman to have originally consisted of less than *five* freemen; but many of them have now grown to be considerable places. They are sometimes under the same administration as the town itself, and are sometimes governed by separate officers; in which case they are, in several respects, looked upon as separate townships.

SECT. 12. *Statistical Notices of the different English Counties.*

England is, at present, divided into 40, and Wales into 12 counties. Of the former, 6 form the northern division; 4 border on Wales; the midland district consists of 12; the eastern of 8; the south-eastern of 3; the southern of 4; and the south-western district of 3. Wales is divided into North and South Wales, each containing 6 counties

But these divisions are arbitrary, and of little or no practical importance.

It is foreign to the objects, and inconsistent with the limits, of this work to enter into minute topographical details; but the subjoined statements seem, notwithstanding, to be necessary to the proper understanding of our subject.

Northern Division.—The northern division of England consists of the following counties:—

1. *Northumberland*, a maritime county, and the most northerly in England, is bounded by Durham and Cumberland on the south and south-west; by the German Ocean on the east; and by Scotland, and a detached portion of Durham, on the north and north-west. It contains 1,197,440 acres, of which it is estimated that about 800,000 are arable, meadow, and pasture. It exhibits every variety of soil and surface; but, except in the vales and along the coast, its most prevalent features are nakedness and sterility. The extensive district bounded by Scotland and Cumberland on the nort-west and west, and by a line drawn from Mindrim to Wooler, Rothbury, and thence, through Hexham, to the confines of Durham, on the north and east, consists mostly of hills, mountains, bleak dreary moors, and swampy morasses. The Cheviot hills are, however, distinguished by their fine green verdure (see *antè*, p. 10.); but the other hills and moors are mostly covered with peat earth, and produce little except heath. Along the coast, and in the vales, the soil, for the most part, consists of a strong clayey loam, and is very fertile. Between the coast district and the moors there is a good deal of moist loam, on a cold clay subsoil. The climate varies with the nature and elevation of the soil, being cold and backward in the mountainous districts, and comparatively mild and early in the vales and low grounds. There are few counties in the empire in which improvements of all sorts have made so rapid a progress. Arable and stock husbandry are both prosecuted with great spirit and success. The system generally followed, on the clayey soils, is to fallow for wheat: the rotation being, 1st, fallow; 2d, wheat; 3d, seeds; 4th, oats; and then fallow again for wheat; but, occasionally, beans and peas are substituted for oats. Sometimes a larger proportion of the farm is sown with grass seeds, that the land may be two or three years between the wheat crops. Turnips are principally grown in the district adjoining the coast. They are universally drilled. Wheat and oats are the principal corn crops. Rye was, at one time, grown extensively on dry sandy soils; but these have been so much improved by the use of lime, and the introduction of the turnip busbandry, that they now produce excellent crops of wheat, so that but very little rye is, at present, raised. A good deal of barley is grown; but neither it nor oats is so largely used by the inhabitants as when Messrs. Bailey and Culley drew up their *Report.* Cattle principally of the short-horned breed. Some wild cattle, believed to be a remnant of the ancient native breed of the country, are found at Chillingham Park. Sheep consist partly and principally of the peculiar hornless breed, known by the name of Cheviots, from the district of that name, where they were originally found; partly of the heath or moor breed, having large spiral horns, and black faces and

legs; and partly of long-woolled sheep. In the best districts the improved Leicesters are now preferred; and the early Leicester lamb, fattened quickly, sells readily in the Morpeth market. The total stock of all kinds of sheep is estimated at about 540,000, and the annual produce of wool at about 12,300 packs.* The best draught horses are brought from Clydesdale. Estates of all sizes, but mostly large: farms also large, bringing, in many instances, from 1000*l.* to 2000*l.* a-year rent: they are generally let on lease for 7, 14, or 21 years. The tenants are usually bound not to exceed two white crops, with a green one between them after a fallow, manure being laid laid on for the first white crop. "The capitals necessary for large farms entitle their occupiers to a good education, and give them a spirit of independence and enterprise that is rarely found among the occupiers of small farms under short leases. Their minds being open to conviction, they are ready to try new experiments, and adopt every beneficial improvement that can be learned in other districts: for this purpose many of them have traversed the most distant parts of the kingdom to obtain agricultural knowledge, and have transplanted every practice they thought superior to those they were acquainted with, or that could be advantageously pursued in their own situation: and scarcely a year passes without some of them making extensive agricultural tours, for the sole purpose of examining the modes of culture, of purchasing or hiring the most improved breeds of stock, and seeing the operation of new-invented and most useful implements." — (*Messrs. Bailey and Culley's Report*, p. 29.) Farm-houses and cottages good, and kept in repair by the landlord: average rent of land, 15*s.* 1¾*d.* an acre.† There are a good many plantations, and some natural woods; but, speaking generally, the county is rather bare of trees. Pit-coal forms the staple product of Northumberland. It possesses an almost inexhaustible supply of this invaluable mineral. There are also rich mines of lead in the south-western parts of the county, with iron, limestone, &c. Newcastle, the principal town in the north of England, ranks, as a shipping port, immediately after London; but its vessels are principally engaged in the coasting trade, or in the conveyance of coals to London, and other places in the south. The principal branches of manufacturing industry carried on in the county are ship-building, and the arts subordinate to and dependent on it. But there are also extensive glass works at Byker, Newcastle, &c., with white-lead works, copper works, &c. Principal rivers, Tyne, Coquet, Alne, Blythe, Wansbeck, and Till. A railway is now being constructed from the tideway of the Tyne to the canal basin at Carlisle, forming a communication across the island. The salmon fishing on the Tyne was at one time important, but is now much fallen off. Cod and other fish, lobsters, cockles, &c., are very abundant upon the coast. Northumberland is divided into 6 wards, and 88 parishes. It returns 10 members to parliament; viz. 4 for the county; 2 each for the boroughs of Berwick and Newcastle; and 1 each for Morpeth and Tynemouth. Principal towns and population in 1831: — Newcastle, 42,760; Tynemouth, 10,182; North Shields, 6,744; Berwick, 8,920; Morpeth, 3,890; Alnwick, 6,788. Population of county in 1831, 222,912. Sum expended for the relief of the poor in 1836, 62,800*l.* Annual value of real property, in 1815, 1,291,413*l.*; profits of trades and professions in ditto, 436,404*l.*

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* A pack is equal to 240 lbs.

† This is the rental as ascertained by the property-tax commissioners in 1810. The grounds on which it is assumed as the present rental will be afterwards stated.

2. *Cumberland*, a maritime county, is bounded on the north by Scotland and the Solway Frith; on the east, by Northumberland and Durham; on the south, by Westmoreland and Lancashire; and, on the west, by the Irish Sea. It contains 974,720 acres, of which about 660,000 are supposed to be arable, meadow, and pasture; the rest principally consisting of mountains, irreclaimable heaths, and lakes. The mountainous and moorish tracts, which are separated into the Eastern and Western Divisions by the valley of the Eden, have been already described (see *antè*, p. 9.). The prevailing soil in the lower districts, and in some parts of the western mountains, is a dry loam, admirably suited for the turnip husbandry; but there is also a good deal of wet loam, on a clay bottom. The soil of the eastern moors and mountains is mostly peat earth, their appearance being bleak, heathy, wet, and barren in the extreme. The climate is more humid than that of Northumberland, and not so favourable for the ripening of corn: neither is the husbandry so good as in the last-mentioned county, but, in general, the land is kept clean and in fair condition, and, considering its quality and the rather unfavourable climate, there are not many counties superior to this in agriculture. Wheat and oats are the principal crops. The rotation on the dry loams, after the land has remained 3 years in grass, which is generally cut for hay 1 year and fed 2, is, 1st, oats; 2d, turnips; 3d, barley or wheat; 4th, seeds: in the clay soil, the wheat is generally fallowed, and the rotation is, 1st, oats; 2d, fallow; 3d, wheat; 4th, seeds. — (*Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 167.) Turnips were first grown in this county, for the use of cattle, by Mr. Howard of Corby, in 1755; they are extensively cultivated, according to the most approved principles of the drill husbandry. The old Cumberland cattle consisted principally of a comparatively small variety of the long horns; but they have been extensively intermixed with Galloways and Kyloes, and, more recently, the short horns have begun to make their way into the county. Sheep partly Cheviots, and partly the black-faced moor breed. The total stock is estimated at nearly 380,000, and the total produce of wool at nearly 7,800 packs. Exclusive of the sheep bred in the county, the Cumberland farmers buy great numbers at the Highland markets; which, being fattened upon turnips, are sent to Liverpool and other places. They also graze large flocks of geese, brought from Northumberland. Property, in Cumberland, is very much divided. There are a few large estates; but by far the largest portion of the county is divided into small properties, varying in value from 10*l.* to 150*l.* a year, generally occupied by their owners, provincially called "statesmen," or "lairds." Messrs. Bailey and Culley inform us, that agriculture is not under any very peculiar obligations to these little proprietors. "The statesmen," say they, "seem to inherit with the estates of their ancestors their notions of cultivating them, and are almost as much attached to the

one as to the other. They are rarely aspiring, and seem content with their situation; nor is luxury, in any shape, an object of their desires. Their little estates, which they cultivate with their own hands, produce almost every necessary article of food; and clothing they, in part, manufacture themselves. They have a high character for sincerity and honesty, and, probably, few people enjoy more ease and humble happiness." — (*Report on Northumberland, Cumberland, &c.*, p. 181.) A good many particulars in this striking description have, however, been materially changed during the last 30 years. No domestic manufactures are now carried on, and, in other respects, the "statesmen" have approached much more nearly to the common level. Farms generally small: they are usually let on 7 years' lease. Tenants strictly prohibited from having 2 white crops in succession; and they are bound to manage their farms so that a certain part of them may remain in grass for 3 years: they are also bound to manure for turnips or wheat, when sown upon a fallow. Farm-houses, offices, and cottages, moderately good and commodious. The Cumberland "lairds" are liable to many vexatious payments that have grown out of the military services to which their ancestors were subject in the days of border warfare: a fine is exigible on the transmission of all real property, whether it passes by descent or by inheritance. Average rent of land, 9*s.* 7½*d.* an acre. The manufacture of ginghams, and other descriptions of cotton goods, is carried on extensively at Carlisle and its vicinity, and at Penrith. Ships are built, and sail-cloth manufactured at Whitehaven and other places. Coarse woollens are made at Keswick; and there are iron founderies and paper-mills at different places. There are some very valuable coal mines; Dublin and a large portion of Ireland, with part of Scotland, being principally supplied with coal from Whitehaven. The lead mines are also valuable. The rare and useful substance known by the name of *plumbago*, or black lead, is believed to be found in greater abundance, and of a better quality, than in any other part of the world, at the celebrated mine of Borrowdale, in this county. Limestone is very abundant. The Eden is the largest river in the county (see *antè*, p. 43.). The lakes, some of which are of considerable size, are celebrated for the picturesque views they afford (see *antè*, p. 44.). Cumberland contains 5 wards and 104 parishes. It returns 9 members to parliament; viz., 4 for the county, 2 each for the city of Carlisle and the borough of Cockermouth, and 1 for Whitehaven. Principal towns and population, in 1831: Carlisle city, 20,000; Whitehaven, 15,716; Workington, 6,415; Cockermouth, 4,536. Population of county in 1831, 169,681. Sum expended for the relief of the poor in 1836, 34,883*l.* Annual value in real property in 1815, 737,438*l.*; profits of trade and professions in ditto, 179,753*l.*

3. *Durham*, a maritime county, is bounded on the east by the German Ocean, on the north by Northumberland, on the west by Cumberberland and Westmoreland, and on the south by Yorkshire. It contains 702,080 acres, of which nearly 500,000 are supposed to be fit for the purposes of aration or meadow. Aspect very various, but for the most part hilly and bare. The country lying to the west of a line drawn from Allansford through Wolsingham to Barnard Castle, con-

sists principally of mountains and extensive heathy moors. Soil very different in different districts; in some it consists of a fertile, clayey loam; but there is a great extent of stubborn infertile clay, with a less extent of calcareous soil of various degrees of fertility. The soil of the moors is mostly peat. Climate various, and depending, in a great degree, on the elevation. When the weather is fine and mild in the lower districts, snow is frequently seen upon the mountains in November, and may be found upon them till the middle or latter end of June. The most general season for harvest is from the beginning of September to the middle of October; but in the western parts of the county it is often prolonged to the middle of November. Agriculture, on the whole, good. Principal crops, wheat, oats, barley, beans, and peas. A mixture of rye and wheat, provincially termed *maslin*, is largely cultivated in this county, and furnishes most part of the bread used by the inhabitants. Turnips extensively cultivated on all the dry lands, but particularly in the vales and newly taken-in lands in the western parts of the county, where improvements are carried on with most spirit. Potato culture best understood in the parish of Whetton-le-Wear. Mustard, of excellent quality, was formerly much grown; but it is now rarely met with. Principal manure, lime, which is obtained in the greatest perfection: it is laid on at the rate of from 70 to 80 bushels an acre, producing, when the land is dry, most luxuriant crops of wheat and clover. The Teeswater variety of short-horned cattle has been long admitted to be one of the very best in the empire, both for feeding and milking, and is now very extensively diffused. The native sheep of the same district are large, and produce fine long combing fleeces; but they have been a good deal crossed and intermixed, in the view of improving their carcass, with the new Leicesters and other varieties. In the other districts, Cheviots and heath sheep are the prevailing breeds. The total stock of sheep in Durham is estimated at about 226,000, and the annual produce of wool at above 6,000 packs. Waggons are very rarely seen in Durham, Northumberland, or Cumberland; all the work being done by single-horse carts, as in Scotland. The Scotch, or swing-plough, drawn by 2 horses driven by the ploughman, is also in universal use. Some large estates; but there are a considerable number of a medium, and many of a very small, size. A great deal of property belongs to the church; the tenures under which are unfavourable to cultivation. Farms of various sizes, from 50 to 1,000 acres; greater number between 50 and 200: except in the western districts they are mostly held at will. "A few are let for 12 or 14 years: where this happens to be the case, considerable improvements are going forward; but the farms let for short periods remain stationary, as no prudent man will lay out his money on improvements for which, when completed, he will be rewarded by an advance of rent proportioned to the improvement he has made."—(*Survey of Durham*, p. 71.) Mr. Bailey speaks very unfavourably of the condition of the small farmers; he says, they work harder and live worse than their servants. Farm-houses, offices, and cottages of a medium description. Average rent of land, 14*s.* 5*d.* an acre. Durham is very rich in mineral treasures. Her extensive and valuable coal mines furnish, along with those in Northumberland, immense supplies for the consumption of London and the southern parts of the island, as well as for exportation. Lead mines numerous in the western part of the county, and extensively wrought. Iron ore is abundant in the western parts of the coal district, and at a former period it was extensively smelted; but the iron works recently established are of trifling importance. Gateshead-fell is celebrated for its freestone quarries, which yield the "Newcastle grindstone," so called from the port of of shipment. Manufactures various, but not very important. Huckaback, diapers, and sheeting, made at Darlington. Principal rivers, Tees, Wear, and Derwent. Darlington and Stockton are united by a railroad. Durham is divided into 4 wards, and 75 parishes. It returns 10 members to parliament; viz., 4 for the county; 2 each for the city of Durham and the borough of Sunderland; and 1 each for the boroughs of South Shields and Gateshead. Principal towns and population in 1831:—Durham city, 10,125; Sunderland with Bishop Wearmouth, 40,735; Gateshead, 20,601; South Shields, 18,756; Darlington, 8,574. Population of county in 1831, 253,700. Sum expended for the relief of the poor in 1836, 65,392*l*. Annual value of real property in 1815, 885,580*l*.; profits of trade and professions in ditto, 253,631*l*.

4. *Yorkshire*, a maritime county, being by far the largest and most important in England, is bounded on the north by the counties of Durham and Westmoreland; on the west by the latter and Lancashire; on the south by the counties of Chester, Derby, Nottingham, and Lincoln, and the Humber; and on the east, by the German Ocean. It contains 3,735,040 acres, of which 2,500,000 are supposed to be arable, meadow, and pasture. It is divided into the districts called the North, West, and East Ridings, being respectively as large as most counties, and each of them having its own lord-lieutenant; and there is besides a separate smaller district, called the city of York and Ainstey. Owing to its immense extent, and various capacities, Yorkshire presents an epitome of the whole kingdom, with respect to surface, soil, products, and industry. Some of the mountains on its western border are among the highest in the great central ridge extending from Scotland south to the middle of Derbyshire; and both there and in its northern division there are very extensive tracts of high, sterile, moor ground (see *antè*, p. 16.). In the East Riding there is a large tract of wolds, extending from Flamborough Head and Filey Head, on the coast, to Pocklington and Market Wighton. But, notwithstanding these deductions, Yorkshire contains a great extent of the most excellent land. The vale of York, the district of Cleveland in the north, and that of Holderness in he south-east (see *antè*, p. 19.), besides various other extensive tracts in different parts of the county, are exceedingly fertile, possessing soils suitable for every purpose, either of arable or stock husbandry. The climate is as various as the soil and elevation; but, except on the high grounds, it is mild and early, and is everywhere salubrious, except on the low, marshy grounds along the Humber. Agriculture in a medium state of improvement: not so far advanced as in Northumberland or Lincolnshire, but not so backward as in several other

counties. There is in this respect, however, a great difference in the different Ridings. Messrs. Kennedy and Grainger say that agriculture is in a much more forward state in the West Riding than in either of the others. The general rotation there is, 1st, turnips or fallow; 2d, barley; 3d, seeds; 4th, wheat. Bone manure is much used, but not to so great an extent as rape dust: the latter, however, is principally used for wheat, the bone manure being decidedly superior for turnips. Drainage is too much neglected in the North and East Ridings. In the latter no system is acted upon except in the wolds, where the rotation is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat. In other parts of this Riding, and in the North Riding, two corn crops not unfrequently follow in succession; and but few operations are performed as they ought to be.—(*Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 367.) Yorkshire is more of a grazing than of an agricultural county. Vast numbers of horses are bred in most parts. Those in the highest estimation are called Cleveland bays, partly from the district in which they were originally found in the greatest perfection, and partly from their colour; but they are now very widely diffused. They are in extensive demand as carriage horses. Cattle very various: they consist mostly of the long-horned breed; but there are considerable numbers of short horns, with endless varieties produced by crosses between these and other breeds, At present the Teeswater and Holderness breeds are the greatest favourites with the graziers; but the long horns, or a cross between them and the short horns, are preferred by the dairy farmers. Yorkshire supplies most of the cows used in the London dairies. Their average yield of milk may be estimated at from 22 to 24 quarts a day; but it does not yield a proportional quantity of butter.—(*Youatt on Cattle*, p. 245.) Sheep as various as cattle. The stock is very large, being supposed to amount to about 1,150,000, producing annually 27,322 packs of wool. Many hogs are kept; and the hams of Yorkshire are famous in every part of the country. Property in the West and North Ridings very much subdivided; but in the East Riding it is less so than in most parts of England. Many families in this Riding have held their estates for centuries. Farms of all sizes; but the great majority seem to be unusually small. Most part of these farms are held from year to year, or by tenants at will; and, notwithstanding the contrary opinion of Mr. Tuke (*Survey of the North Riding*, pp. 55—76.), we have the best reasons for thinking that this has operated in no ordinary degree to retard the progress of agriculture. It has made such of the tenants as have attempted improvements turn their principal attention to stock rather than to tillage husbandry. A tenant without a lease, and, consequently, depending on the good will and caprice of his landlord, may not deteriorate his farm; but it would be absurd to suppose that he should lay out any considerable amount of capital on its improvement. Farm-houses and buildings for the most part rather indifferent. Average rent of land, 16*s.* 8*d.* an acre. The West Riding of Yorkshire, if it be not the very first, certainly stands in the first rank as a manufacturing district. Leeds, Bradford, Huddersfield, Halifax, and Wakefield, are the great seats of the woollen manufacture; and flax-spinning is carried on to a greater extent at Leeds than any where else in England. The manufacture of hardware at Sheffield, and the immediate contiguous districts, rivals, and in some departments, such as cutlery, far surpasses, that of Birmingham. There are extensive iron works at Rotherham, which have long enjoyed a considerable celebrity. But the iron works of Yorkshire are, if not declining, making but little progress. Their total produce in 1830 was estimated at about 28,000 tons. Cotton factories have been established at Easingwold, and in some other parts of the West Riding. The manufactures in the other Ridings are but of trivial importance. The valuable beds of coal found in the vicinity of Leeds, Sheffield, Bradford, Wakefield, &c., have, no doubt, been the principal source of their prosperity. Besides coal and iron, Yorkshire has mines of lead, and veins of copper; alum works were established at Whitby in the reign of Queen Elizabeth, and are still carried on; and there are in various places excellent limestone and freestone quarries. Principal rivers, Ouse, Swale, Ure, Wharfe, Aire, Calder, Don, Derwent, Hull, and Esk; the waters of all of them, except the last, being poured into the great estuary of the Humber (see *antè*, p. 43.) The canals, particularly in the West Riding, are numerous, and many of them are of the greatest importance. A railroad is completed from Leeds to the Ouse at Selby. The roads, generally speaking, are good, and are mostly kept in good order. Hull, the principal port of Yorkshire, carries on an extensive foreign trade; but it has now a formidable rival in the new port of Goole (see *antè*, p. 38.); a good deal of trade is also carried on by Whitby and Scarborough. The county is divided into wapentakes and liberties; and contains 613 parishes. It returns 39 members to parliament; viz., 6 for the county, being 2 for each Riding; 2 each for the city of York, and the boroughs of Leeds, Sheffield, Hull, Bradford, Halifax, Doncaster, Pontefract, Ripon, Knaresborough, Beverly, Malton, Richmond, and Scarborough; and 1 each for the boroughs of Huddersfield, Whitby, Wakefield, Northallerton, and Thirsk. Principal towns, and population in 1831, — city of York, 25,359; Leeds, 123,393; Sheffield, 91,692; Hull, 54,110; Halifax, 34,437; Huddersfield, 19,035; Wakefield, 24,538; Bradford, 43,537; Saddleworth, 15,986. Population of East Riding, 169,800; North ditto, 190,800; West ditto (manufacturing district), 976,400. Sum expended for the relief of the poor in 1836, 329,471*l.* Annual value of real property in 1815, 4,760,425*l.*; profits of trade and professions in ditto, 1,719,887*l.*

5. *Westmoreland*, an inland county, is bounded on the north and north-west by Cumberland, on the east by Yorkshire, and on the south and south-west by Lancashire. It also touches Durham for a small space on the north-east. It contains 487,680 acres, of which only 180,000 are set down as arable, meadow, and pasture. It is what its name (*West-moor-land*) imports, a region of lofty mountains, naked hills, and black barren moors; but the valleys, particularly those of the Eden in the north, and of Kendal in the south, are fertile and well cultivated. The agriculture, state of property, and the character and condition of the occupiers of Westmoreland, are so very similar to those of Cumberland, that the statements as to the latter may be applied, with very little variation, to the former. Average

rent of land, 9*s.* 1*d.* an acre, being the lowest of any in England. Westmoreland abounds in slate of the finest quality; in lead; and in some few places, on its southern and western borders, there are coal mines. Principal rivers, Eden, Lune, and Kent. The lakes are even more celebrated than those of Cumberland. Windermere, on its western border, is the most extensive lake in England. — (See *antè*, p. 44.) The county is divided into 4 wards and 32 parishes. It returns 4 members to parliament; viz., 2 for the county, and 2 for the borough of Kendal and some adjoining districts. The county town is Appleby; but the principal town is Kendal, celebrated for the manufacture of a peculiar description of coarse woollen goods called cottons, being, most probably, a corruption of coatings. Population in 1831, — County, 55,041; Kendal, 10,015; Appleby, 2,723. Sum expended for the relief of the poor in 1836, 18,019*l.* Annual value of real property in 1815, 299,582*l.*; profits of trade and professions in ditto, 52,575*l.*

6. *Lancashire*, a maritime county, being the last in the northern division, is bounded on the north and north-west by Westmoreland and Cumberland; on the north-east and east, by Yorkshire; on the south, by Cheshire and the estuary of the Mersey; and on the west, by the Irish Sea. Its most northern part, consisting of the peninsulated hundred of Furness, is detached from the main body of the county by the intervention of part of Westmoreland and the river Kent. The coast is of great extent, and is deeply indented by bays and arms of the sea. It contains, in all, 1,130,240 acres, of which about 850,000 are supposed to be arable, meadow, and pasture. Surface very various. The hundred of Furness is rugged and similar to Westmoreland: along the Yorkshire border there is a considerable extent of hilly and moorish ground; and this is, also, the character of the whole tract of country from the ridge called Blackstone Edge west to Chorley. The southern part of the county from Formby Point and Liverpool east to Oldham, is an immense plain, interspersed with several extensive mosses. The hundred of Fylde, between Lancaster bay and the estuary of the Ribble, is also flat, and is comparatively rich and fertile. Sandy loam and sand are the most prevalent soils in the lower districts, and peat in the moors. The climate, though probably the most humid of any in England, is mild and salubrious. Lancashire owes its celebrity, wealth, and population to its manufactures and commerce, and not to agriculture, in which it has little to boast. Principal corn crops, oats and wheat, particularly the former. Few turnips are raised; but potatoes are more extensively cultivated than in any other English county; and this is probably also true of carrots. A good deal of hemp is raised. It is said, in the *Agricultural Survey of Lancashire*, published in 1795, that "nothing can be so barbarous as the rotation of crops in this district; if that can be denominated a system of rotation which depends merely on the caprice of the cultivator, or upon what he thinks the land is capable of producing for the moment." (p. 52.) And it would seem, from the statements of Messrs. Kennedy and Grainger, that the progress made towards a better system in the lengthened period that has elapsed since the *Survey* was published, is not nearly

so great as might have been supposed. They tell us that tenants are either prohibited from having more than a certain portion of their lands under the plough at any time, being allowed to manage it as they please, or they are prohibited from having more than two white crops in succession, before the laid is land down in seeds in regular rotation for one or more years. The latter is the preferable practice, but they are both bad; and a great deal of the land under tillage is, always foul, out of condition, and worn out. Draining is much neglected. It is singular that, in a county so distinguished for machinery, corn should be almost entirely threshed by the flail, and that every description of agricultural implements should be of the most defective construction.—(*Tenancy of Land*, vol. i. p. 259.) Most parts of Lancashire are well supplied with marl, the liberal use of which has been of much service. It is, however, more of a grazing and dairying, than of a tillage, county; the portion of the surface in grass being by much the largest. Immense quantities of hay are required for the supply of the numerous large towns; and the bleaching grounds cover considerable extent of land. Lancashire is believed to be the native country of the long-horned breed of cattle; but they are now so much crossed and intermixed with others as to be seldom found pure. The short horns have been pretty extensively introduced. The Yorkshire, or Holderness cows, being superior to all others as milkers, are generally kept in the vicinity of large towns; but in the cheese and butter dairies, in the northern and middle parts of the county, long-horned cows are mostly kept. In the cheese dairies the average produce is from 2½ to 3 cwt. of cheese from each cow, the family being also provided with milk and a little butter. Few sheep are kept in the southern parts of the county; but they abound in the north and north-western districts. They are mostly of the heath breed; though South Downs, Cheviots, and other varieties have been extensively introduced. The total stock in all parts of the county is estimated at 310,000; and the annual produce of wool at about 5,800 packs. Horses of various kinds are bred in most parts; and the stock of this useful animal has been much improved. There are some large estates; but property is generally very much divided. Tillage farms, for the most part, small; but the majority of those occupied by dairy farmers are rather large. They are most commonly let on lease for 7 years. Farm buildings generally good. The fences in many parts consist of dry stone walls. There are some pretty extensive coppice woods in the northern parts of the county; but, generally speaking, it is deficient in timber. Average rent of land, 1*l.* 2*s.* 5¼*d.* an acre. Lancashire is the grand seat of the cotton manufacture; which has increased, since 1770, with a rapidity altogether unparalleled in the history of industry, and has been productive of an extraordinay increase of population and wealth. Manchester, now the second town in the empire, is the principal centre of the manufacture; but it is also carried on to a great extent, and with astonishing success, at Preston, Bolton, Oldham, Ashton, Blackburn, Bury, Chorley, Wigan, &c. Woollen goods are also largely produced at Rochdale, Manchester, &c., as are silk, hats, paper, and an immense variety of other articles. Lancashire is indebted, in no inconsiderable degree, for its wonderful progress in arts and commerce, to its inexhaustible coal-mines, which supply, at the cheapest rate, that power which sets its machinery in motion. Copper, lead, iron, and slates are all found in the hundred of Furness. Large quantities of the latter are shipped at Ulverstone. Principal rivers, Mersey, Irwell, Ribble, Lune, Wyre, &c. (See *antè*, p. 39.) The first of the modern English canals was constructed, by the Duke of Bridgewater, in this county, which was the grand theatre of Brindley's operations; and it now commands a vast extent of artificial navigation. The railroad from Manchester to Liverpool is a work not only of vast local, but of great national, importance: its opening marks a new and important era in the history of internal communication, and its success has led to many similar undertakings. The foreign trade of Lancashire is mostly centred at Liverpool, which, from an obscure, inconsiderable place, at the commencement of last century, has become a very large and populous city; being, London only excepted, the principal emporium of Europe. The customs' duties collected at this port in 1835 amounted to the immense sum of 4,272,847*l.* It is to be regretted that, notwithstanding the great extent of the Lancashire coast, it does not possess, with, perhaps, the exception of Liverpool, a single good harbour; and the entrance to the latter is a good deal encumbered with sand-banks. Lancashire is a county palatine. (See *ante*, p. 146.) It is divided into 7 hundreds and 4 boroughs, and contains 70 parishes. It returns 26 members to Parliament; viz., 4 for the county; 2 each for the boroughs of Manchester, Liverpool, Oldham, Bolton, Preston, Lancaster, Wigan, and Blackburn; and 1 each for Rochdale, Bury, Clitheroe, Ashton-under-Line, Salford, and Warrington. Principal towns and population, in 1831 — Manchester, 187,002; Liverpool, 165,172; Salford (often reckoned along with Manchester), 50,810; Oldham, 50,513; Bolton, 43,396; Rochdale, 41,308; Preston, 33,871; Ashton-under-Line, 33,597; Blackburn, 27,091; Toxteth-park, adjacent to Liverpool, 24,067; Wigan, 20,774; Warrington, 18,184; Bury, 19,140. Population of the county, in 1831, 1,336,854. Sum expended for the relief of the poor in 1836, 193,854*l.* Annual value of real property, in 1815, 3,139,043*l.*; profits of trade and professions in ditto, 2,292,078*l.*

Counties bordering on Wales.

1. *Cheshire*, a maritime county, is bounded on the north by the estuary of the Mersey, Lancashire, and a small part of Yorkshire; on the east by Derbyshire and Staffordshire; on the south by Shropshire and a detached part of Flintshire; and, on the west, by Denbighshire, Flintshire, and the estuary of the Dee. It contains 673,280 acres, which Dr. Holland states were distributed, in 1808, nearly as follows: viz., arable, meadow, and pasture land, including parks and pleasure-grounds, 620,000 acres; waste lands, heaths, commons, and woods, 28,600 acres; peat bogs and morasses, 18,000; the residue consisting of sea sands within the æstuaries of the Dee and the Mersey. But a good deal of the waste land, and of the bogs and morasses, has since been brought under tillage. A ridge of hills runs

along the eastern border of Cheshire, from Lawton, on the confines of Staffordshire, to its north-eastern extremity; and a ridge extends from Malpas, on its western side, to Frodsham. The latter is, however, much broken. The most singular feature in it is the insulated rock of Buston, about two miles south from Tarporley, rising on one side, almost perpendicularly from the plain, about 366 feet. But, with these exceptions, the rest of the county, comprising four fifths of its entire extent, is remarkable for the flatness of its surface, being, probably, not more, on a medium, than from 100 to 200 feet above the level of the sea. Its appearance is that of an extended plain, thickly covered with wood. The soil consists, for the most part, of a red, rich, clayey, or sandy loam; and, with the exception of a few limited tracts of moss and heath, it is eminently fertile. More rain is believed to fall in Cheshire than in any other part of England; Westmoreland and Lancashire, perhaps, excepted. It is impossible to imagine a finer grazing district. The grass, owing to the mildness and moisture of the climate, the favourable nature of the soil, and the shelter afforded by the luxuriant hedges and hedge-row trees with which the fields are surrounded, retains its verdure and its growth throughout almost the whole year. The dairy husbandry is, in consequcnce, principally attended to. Dr. Holland, following Mr. Fenna, estimates the number of cows kept in the county, for dairy purposes, at 92,000. Cheese is the principle product; and it is not only well known and highly esteemed every where in England, where the consumption is immense, but also in most parts of Europe. Supposing each cow to yield, at an average, 2½ cwt. of cheese, the whole annual produce will be 11,500 tons. — (*Survey*, p. 252.) Arable husbandry, being deemed of inferior importance, is but indifferently understood, and is considerably behind. Potatoes very extensively cultivated: in addition to the great home consumption of the root, immense quantities are sent to Liverpool, Manchester, and other markets in Lancashire. They are usually planted on a ley, being commonly followed by oats, and these not unfrequently by wheat or barley. Estates, for the most part, large. Farms small, a great many being under 10 acres, and only one or two of 350 or 400 acres. If those under 10 acres be excluded, the average size of the rest may be about 70 acres. Leases becoming less common than formerly: tenants strictly prohibited, under heavy penalties, from having more than a given proportion of their farms (generally about a third) under tillage, and from breaking up meadows. Though there are no very large woods in Cheshire, it contains a great deal of very valuable timber, chiefly in hedge-rows. From some points of view, indeed, the whole county resembles a vast and continued forest. Average rent of land, 20*s*. 1½*d*. an acre. Cheshire possesses large supplies of excellent marl, the plentiful use of which has materially contributed to its fertility. It is also famous for its inexhaustible beds of fossil or rock salt, near Northwich, Middlewich, &c.; and for its brine springs, contiguous to the same places. Vast quantities of the former are annually dug up both for home and use and for exportation. It has also extensive beds of coal. Manufactures of cotton, silk, &c., have been extensively introduced into this county, and are carried on with much spirit and success at Macclesfield, Stockport, Congleton, and other places. Hats are made at Stockport, &c., and shoes for exportation at Sandbach. Small quantities of lead and shot are made at Chester. Principal rivers, Dee and Weaver. It is also intersected by several canals. Notwithstanding its apparently favourable situation, Cheshire has but little foreign trade. It is divided into 7 hundreds and 90 parishes, exclusive of the city of Chester. It returns 10 members to parliament; viz., 4 for the county, and 2 each for the city of Chester and the boroughs of Macclesfield and Stockport. Principal towns and population, in 1831, — city of Chester, 21,363; Stockport and Brinnington, 29,456; Macclesfield, 23,129. Population of the county in 1831, 334,410. Sum expended for the relief of the poor in 1836, 73,894*l.* Annual value of real property in 1815, 1,114,927*l.*; profits of trade and professions in ditto, 289,309*l.*

2. *Shropshire*, or *Salop*, an inland county, is bounded on the north by Cheshire, the detached part of Flintshire, and a corner of Denbighshire; on the west, by the latter county, and the counties of Montgomery and Radnor; on the south by Hereford and Worcester; and on the east by Stafford. It contains 859,520 acres, of which nearly 790,000 are supposed to be arable, meadow, and pasture. Aspect much diversified. No part of the surface is quite flat; but the great plain of Salop, or Shrewsbury, is comparatively level. It extends lengthwise from Whitchurch, on the confines of Cheshire, south to Church Stretton, a distance of about 30 miles; and from Oswestry, on the confines of Denbighshire, to Colebrook Dale on the east, about 28 miles. The Wrekin-hill (*ante*, p. 11.) rises out of this extensive plain on its eastern side. The south, or rather the south-west, parts of the county contain several ranges of flattish, square-shaped hills, divided by beautiful valleys. The Bettus-ridge, on the confines of Radnorshire, the Stipper-stones, the Long-mount, and the Wenlock-ridge, are the most important. Soil various, but generally fertile. On the east it consists of a red sandy loam, like that of Cheshire; on the south, a mixture of clay and loam is most prevalent; on the west, there is a good deal of gravelly light soil. The harvest is said to be a fortnight earlier on the east than on the west side of the county; a difference depending partly, no doubt, on the greater elevation of the ground on the western side, but partly, also, on differences of soil. Salop is principally under tillage; but, in the south and west, breeding and dairying are carried on to a considerable extent. A good deal of cheese, sold under the name of Cheshire, but inferior to the genuine article, is made in this county. The wool of the hilly tracts used to be of a peculiarly fine quality, but it has deteriorated within the last 20 or 30 years, in consequence of the efforts of the farmers to increase the size of the sheep and the weight of the fleece. The total stock of sheep in the county is supposed to exceed 420,000; producing annually above 7,000 packs of wool. Hops are produced on the borders of Hereford. Property variously divided; some estates being very large, while there are many of every inferior degree of size. On the borders of Wales, farms very small; many not exceeding 20 acres; but on the east side of the county, in the vicinity of Shiffnal, Wellington, Newport, &c., they vary from 100 to 500 acres

or more. The district of Clun Forest, in the south-west part of the county, is divided into small freehold properties, varying in value from *5l.* to *150l.* a year, the majority being of the smaller class. Their occupiers, who in most cases are also the owners, employ few labourers, the principal part of the work on their farms being executed by themselves and their families. Farmers very industrious, working along with their servants, while their wives bake, brew, spin, &c. Leases less common now than formerly, and farms generally held from year to year. Agricultural management improving; but, owing to the want of leases of a reasonable length, and with proper conditions as to management, it continues to be very defective. The number of corn crops taken in succession has been materially diminished within the last 15 or 20 years; but two wheat crops still not unfrequently follow each other. These remarks do not, however, apply to the district on the east side of the county mentioned above, where the farms are large; for there the tenants are active and enterprising, and agriculture highly improved. Turnips extensively cultivated, and, for the most part, in drills; few oats grown. Cattle of mixed breed, and rather inferior. Pork and bacon much used by the people. Large flocks of turkeys raised by some farmers. Drainage in some places much wanted. Average rent of land, 17*s.* 2*d.* an acre. Principal mineral products, iron, coal, lead, limestone, and freestone. With the exception of South Wales and Staffordshire, more than double the quantity of iron is made in Salop that is made in any other county of the empire. The number of furnaces increased from 38, in 1823, to 48, in 1830, producing, in the last mentioned year, above 73,000 tons of iron; and, owing to the rise of prices in the interval, the production, at present, is, we believe, decidedly greater. The furnaces are principally situated in Colebrook Dale, between Wellington and Willey. Excellent China ware, and a very superior species of pottery, are made at Coalport on the Severn, and its vicinity: pipes, nails, &c., are made at Broseley; carpets at Bridgnorth; gloves at Ludlow, &c. Some branches of the flannel manufacture are carried on in Shrewsbury and its neighbourhood; but by far the largest portion of the flannel sold in its markets is brought from Merionethshire and Denbighshire: latterly, however, there has been a material falling off in this trade. The Severn, which becomes navigable at Pool, in Montgomeryshire, traverses the county in a south-easterly direction, dividing it into 2 not very unequal portions; and it is besides intersected by several very important canals. The first iron bridge constructed in Great Britain was erected in this county, in 1777, by Mr. Abraham Darby, of Colebrook Dale. It crosses the Severn about 2 miles above Coalport. It consists of a single arch 100 feet 6 inches wide, rising 45 feet; and is as perfect now as when first put up. Another iron bridge, on a larger scale, was thrown over the Severn at Buildwas, by Mr. Telford, in 1797. Roads formerly very bad, but now a good deal improved, though still susceptible of much amelioration. Salop is divided into 15 hundreds, or districts, answerable to that denomination, and 216 parishes. It returns 11 members to parliament; viz., 4 for the county, and 2 each for the boroughs of Shrewsbury, Bridgnorth, and Wenlock, and 1 for Ludlow. Principal towns and population, in

1831, Shrewsbury, 21,227; Oswestry town and parish, 8,581; Ludlow, 5,253. Population of county in 1831, 222,503. Sum expended for the relief of the poor in 1836, 64,003*l.* Annual value of real property in 1815, 1,083,702*l.*; profits of trade and professions in ditto, 279,933*l.*

3. *Herefordshire*, an inland county, is bounded on the north by Salop; on the west, by the counties of Radnor and Brecknock; on the south, by those of Monmouth and Gloucester; and, on the east, by the latter and Worcester. It contains 552,320 acres, of which nearly 500,000 are arable, meadow, and pasture. Surface beautifully diversified, and set off to the greatest advantage by magnificent woods. On the east it is separated from Gloucestershire by the Malvern hills; and, on the south-west, it is separated from Brecknockshire by the Black Mountains. The soil is usually represented as being every where rich and fertile. But the luxuriant woods, and rich alluvial lands upon the banks of the rivers, are said to have deceived the superficial observer; and that the fertility of the soil is not, speaking generally, so great as is commonly stated. The pasture grounds are even said to be poor, and the herbage not nutritious. — (*Youatt on Cattle*, p. 33.) But it, notwithstanding, produces excellent crops of wheat and barley; and is particularly celebrated for its cider and wool. Hops extensively cultivated, principally in the parts bordering on Worcestershire; there being, in 1834, 12,018 acres under this crop. Property variously divided: some large estates; many of a medium, and some of a small, size. The tenures of gavelkind and borough-English exist in some districts, but are usually nullified by will. Farms generally large; number of those that are small decreasing; let, for the most part, by the year. Considering the sort of tenure under which it is held, the land is in general tolerably well managed; but in many places its drainage is neglected, and there is a great want of good husbandry. Turnips extensively cultivated. In some parts very important improvements have been accomplished by means of irrigation. Herefordshire cattle deservedly held in great estimation; they feed easily, though less active than those of North Devon; they are excellent workers, produce the finest beef, and are remarkably quiet and tractable. Nearly half the ploughing is performed by them; and they are extensively employed in the labours of harvest. As milkers, however, they are good for nothing. The wool of the Ryland sheep, so celebrated for its fineness, has been injured by crossing with the Leicester's, but the carcase has been materially improved. At an average, the weight of the Herefordshire fleeces, and the produce of wool, is supposed to have been about doubled since 1800! The stock of sheep in the county is very large, being estimated at about 500,000 head; and the quantity of wool now annually brought to market is rated at about 8,300 packs. Average rent of land, 16*s.* 5*d.* an acre. Oak timber is very abundant in this county; and forms, with oak bark, an important article of export. Iron ore has been discovered, but it is not wrought; and the other minerals are of little importance. If we except that of cider, large quantities of which are sent to all parts of the country, Herefordshire has no manufactures of any importance. Gloves are, however, made at

Hereford and Leominster; ropes and sacking at Tedbury; and some coarse woollens in a few places. Principal rivers, Wye, celebrated for its beautiful scenery, Lug, and Munnow. The Wye is navigable, at particular periods, to Hereford, for barges carrying from 18 to 30 tons; but the navigation is very uncertain, being liable to frequent interruptions from a deficiency of water, floods, &c. Hereford is divided into 11 hundreds and 219 parishes. It returns 7 members to parliament; viz., 3 for the county, and 2 each for the city of Hereford and the borough of Leominster. Principal towns and population, in 1831,—Hereford city, 10,280; Leominster borough and parish, 5,249; Ross, 3,078. Population of county in 1831, 110,976. Sum expended for the relief of the poor in 1836, 42,195*l.* Annual value of real property in 1815, 629,156*l.*; profits of trade and professions in ditto, 61,851*l.*

4. *Monmouthshire*, a maritime county, is bounded on the north by the counties of Hereford and Brecknock; on the west by the latter and Glamorgan; on the south and south-east by the Bristol Channel; and, on the east, by Gloucestershire. It contains 317,440 acres, of which 270,000 are arable, meadow, and pasture. Aspect much diversified, comprehending every variety of scenery, from the wildness and sublimity of Alpine regions, to the richness and variety of a cultivated country. The western division, or that between the river Usk and Glamorganshire, is, for the most part, rugged and mountainous; but the eastern division, or that lying between the rivers Usk and Wye, is comparatively level, and is well wooded. Soil various, but generally of a good quality. Substratum, in many parts, limestone. There is a considerable extent of low, level land along the coast, of a deep, rich, loamy soil in some places, and of a black peat earth in others. Parts of this tract are liable to be overflowed by the sea, and it is defended from inundation by immense dykes. Agriculture a good deal improved, but still susceptible of much amendment. Tillage chiefly performed by oxen. Upon clay the rotation is fallow, wheat, oats, seeds; and, upon the sandy soil, turnips, barley, seeds, and oats: a fallow is then made for wheat, if the land be not very clean; but most frequently a second crop of wheat is sown after oats. Lime is the principal manure. Cattle of the Hereford breed: they are finer beasts than those kept in most of the adjoining counties, except in that whence they derive their name and origin. Mules are a good deal used, principally about the mines. Stock of sheep estimated at about 175,000, producing 2,000 packs of wool a year. There are numerous orchards, but generally on a small scale: hops are cultivated in a few places. Some large estates, but the property a good deal subdivided. Size of farms from 60 to 300 acres; 140 acres supposed to be the medium. Farms usually let from year to year, and the want of leases much complained of. Average rent of land, 12*s.* 9¾*d.* an acre. About 30 years ago, roads were in the most wretched state imaginable; now, however, they are a good deal improved. The county is intersected by two canals, and by various railroads, intended to facilitate the access to the mines. Principal minerals, coal, iron, and limestone. The abundance of iron-ore and coal has led to the establishment of a great many very extensive iron works, that furnish

employment to a numerous population, and are of great public importance. These are principally situated in the western division of the county. Those of Tredegar are upon a very large scale. Manufactures of little importance. Pontypool was at one time famous for its japanned ware; but this article is now principally produced at Birmingham, Bilston, and Wolverhampton. Principal rivers, Wye, Usk, Munnow, and Ebwy. It is divided into 6 hundreds and 127 parishes. It returns 4 members to parliament; viz., 2 for the county, and 2 for the borough of Monmouth. Principal towns and population, in 1831, Pontypool and parish, 10,820; Aberystwith, 5,992; Monmouth, 4,916. Population of county, in 1831, 98,130. Sum expended for the relief of the poor in 1836, 22,377*l.* Value of real property in 1815, 298,981*l.*; profits of trade and professions in ditto, 102,571*l.*

Midland Counties.

1. *Nottinghamshire*, an inland county, is bounded on the north by the counties of York and Lincoln; on the east by the latter; on the south by Leicester; and, on the west, by Derby and York. It contains 535,680 acres, of which about 470,000 are arable, meadow, and pasture. Excepting the level through which the Trent runs, and the vale of Belvoir, the surface is, for the most part, hilly and uneven; but the hills do not rise to any considerable height. On the western side of the county, from Nottingham to Bawtry, the soil is principally sandy and gravelly; east of this, from Burton Joyce to Breckingham, is a tract of clay land. The soil of the low level tract along the Trent, called the Trent-bank land, consists principally of a sandy loam; and that of the fruitful vale of Belvoir of a clayey loam. The climate is reckoned peculiarly dry and good. Harvest generally begins about the 1st of August, and is concluded by the middle or end of September. The ancient forest of Sherwood, the principal scene of the adventures of Robin Hood and his companions, covered the greater part of the sandy and gravelly soil on the west side of the county, which is still, for that reason, called the forest district. The forest extended, lengthwise, from Nottingham to near Worksop, a distance of about 25 miles, with a breadth varying from 6 to 9 miles; but it has been long since disafforested, and now contains some of the finest parks and residences in England. Agriculture, though not equally advanced in all parts of the county, is, on the whole, good. The forest lands produce excellent crops of barley and turnips. The Trent-bank land is famous for its crops of oats, as many as 10 quarters having been reaped from a single acre! and their quality is not inferior to their quantity. — (*Lowe's Survey*, p. 28.) In the northern parts of the county, and in the vale of Belvoir, wheat is the principal crop; beans, peas, and cabbages are also grown. A species of oats, provincially called *skegs*, are raised in this county: they are sown on the worst land, where they produce about 4 quarters an acre; but on good land they produce 14 or 15 quarters an acre. They are reckoned excellent food for horses, fetch about two thirds the price of oats, and grow where nothing else will. — (*Lowe*, p. 148.) Hops have been cultivated in the northern district,

but to a small extent only. There is a considerable breadth of excellent grass land and meadows on the banks of the Trent and the Soar, employed partly for feeding and partly for the dairy. About half a century ago the cattle were mostly long-horned, but these are now nearly superseded by the short horns. The sheep in the forest district used to be a small-polled breed, with grey faces and legs; but it has now almost entirely disappeared, being supplanted by the new Leicester and other improved varieties. The total stock of sheep in the county is estimated at about 255,000, and the annual produce of wool at about 8,900 packs. Some large black draught horses are bred. There is a good deal of timber in the forest district; the Dukes of Newcastle and Portland having distinguished themselves by the magnitude of their plantations. The latter is, also, distinguished by the extent to which he has carried irrigation; having converted, by its means, a large district of light, unproductive, forest land into very valuable meadow. Pigeons very abundant. There are some large, and many small, estates. Farms generally small, and mostly held at will. Farm buildings said to be spacious and convenient. Average rent of land, 19*s.* 11¾*d.* an acre. Nottinghamshire, especially the town of Nottingham, is one of the principal seats of the stocking manufacture. Of 33,000 stocking frames—the number supposed to be employed in the whole empire in 1833—Nottinghamshire had 10,500. They are mostly all employed in the manufacture of cotton and silk stockings, especially the former. This county is also famous for the beautiful fabric known by the name of bobbinet, or Nottingham lace. This, which is a novel branch of manufacture, has increased with extraordinary rapidity, and is now become of very great value and importance. The malting business is, also, extensively carried on. Coal is abundant in the western parts of the county; and there are valuable limestone and freestone quarries. The Trent enters the county on its south-western border, at Attenborough, and, pursuing a north-westerly course by Nottingham and Newark to Laneham, it forms from this point, as far as West Stockwith, the boundary between Nottinghamshire and Lincolnshire. The Idle rises in Sherwood Forest, and, flowing through Ollerton and East Retford, falls into the Trent at West Stockwith. The Soar, previously to its falling into the Trent, separates the extreme south-western angle of the county from Leicestershire. The county is also intersected by the Nottingham, Chesterfield, and other canals. Nottinghamshire is divided into 6 wapentakes or hundreds, and the liberty of Southwell and Scrooby, and contains 285 parishes. It returns 10 members to parliament, viz. 4 for the county, and 2 each for the boroughs of Nottingham, Newark, and East Retford. Principal towns and population, in 1831,—Nottingham, 50,680; Newark-on-Trent, borough and parish, 9,557. Population of county in 1831, 225,320. Sum expended for the relief of the poor in 1836, 50,366*l.* Annual value of real property in 1815, 751,626*l.*; profits of trade and professions in ditto, 314,501*l.*

2. *Derbyshire*, an inland county, is bounded on the north by the county of York and a small part of Cheshire; on the west by the latter and Stafford; on the south by the latter, Leicester, and a single point of Warwick; and on the east by Nottingham. It contains 657,920 acres, of which about 500,000 are arable, meadow, and pasture.

All that part of the county which lies to the south of Belper is comparatively level, but from it northwards the hills begin to ascend, forming the commencement of that great central ridge that runs thence to the Scottish border. The north-western angle of the county, called the High Peak, is full of mountains and moors; and is famous for its caverns, of which the most celebrated is near Castleton; and other natural curiosities. But its most romantic scenery is found in its valleys and dells, some of which are narrow, and bounded by high, precipitous, fantastic cliffs. The soil in the southern part of the county consists principally of a reddish loam. In the middle and eastern parts, there is almost every variety of soil. Considerable tracts of moss are met with in the High Peak. The climate varies with the elevation and exposure of the land,—being cold and backward on the high grounds, and mild in the lower parts of the county and in the vales. Derby is both a corn and a pasture county, but the latter predominates, particularly in the northern parts. Agriculture rather behind. In the southern parts, tenants are seldom under any restriction either as to the mode or frequency of cropping; so that the land is too often in a foul, exhausted state. There is every where, also, a great want of drainage. Principal crops, wheat, beans, and oats. In the northern parts of the county, the dairy is the great dependence of the farmer; and there the occupiers are strictly prohibited from breaking up any pasture land—their tillage being confined to a small spot hardly sufficient to supply their consumption, and sometimes even that is not allowed. Oats is the leading crop in this district; and oat bread has long been a principal part of the food of the labouring classes in the High Peak. In ploughing, the horses are always driven in line; 3 or 4 being most commonly yoked to a plough, which has generally 2 wheels. There is no decided preference shown to any particular breed of cattle; some prefer the long-horned or Stafford breed, and others the short-horned or Durham breed, but the former are much more general than the latter. A cross between these breeds is much sought after, being considered to possess most of the good qualities of each. —(*Kennedy and Grainger on the Tenancy of Land*, p. 184.) Cheese is the principal product of the Derbyshire dairies, and is in considerable estimation. It is here a common practice, when cheese is made from new milk, to extract butter afterwards from the whey. The principal dairy district is in the vicinity of Ashbourn; and about 2,000 tons of cheese are said to be annually exported. The moor breed of sheep was formerly most prevalent in all the northern parts of the county, but it has been nearly superseded by other and larger varieties. At present, the total stock of sheep in the county is estimated at about 360,000, and the total annual produce of wool at about 9,000 packs. The black horses of Derbyshire rank next to those of Leicester. Great numbers of hogs, of no peculiar breed, are kept at the dairies; and more asses are employed in this than in any other English county. Estates of various sizes; some very large, but the great majority small. Farms generally small, and mostly held at will. Farm buildings, particularly in the northern parts, on a very limited scale. Average rent of land, 18*s.* 10¾*d.* an acre. Derby ranks high as a mineral and manufacturing county. The coalfield is of great extent, stretching from Dale Abbey north to the frontier of the county. It is certain that the collieries near Derby were wrought as early as 1306. Ironstone is found in most parts of the coal district; and iron has been produced and smelted in this county from a remote epoch. In 1830, the total produce of the Derbyshire furnaces amounted to about 18,000 tons. The lead mines have long been famous; and it appears to be satisfactorily ascertained that they were wrought by the Romans. They are principally situated in the hundreds of Wirksworth and High Peak; but they are also found in other parts of the county. Latterly, however, they have been declining. In 1789, the produce of the mines is said to have amounted to from 5,000 to 6,000, whereas at present it is not supposed to exceed 3,000 tons.—(*Encyc. Metrop.* Part xxxix. p. 195.) A good deal of zinc is obtained from some of the lead mines. Copper has been found, but in inconsiderable quantities. The mines and miners of this county are subjected to peculiar laws and regulations, established so far back as 1287, which are fully detailed in *Farey's Survey* (vol. i. pp. 356—365.). Derbyshire is famous, also, for its spar, and its quarries of marble, gypsum, &c. The manufactures consist principally of cotton and silk, and are of great value and importance. Cotton spinning is principally carried on in the parish of Glossop, on the confines of Cheshire in the High Peak, and at Belper, Derby, Cromford, and other places. Sir Thomas Lombe's famous silk mill was erected at Derby in 1719: at present there are about 10 silk mills in that town in full operation. Porcelain of a superior quality, and beautiful spar ornaments, are both produced at Derby. There are cast iron and nail manufactories at Chesterfield, Belper, &c.; and hats, with a great variety of other articles, are made in different parts of the county. Principal rivers, Trent, Derwent, Dove, and Rother. The Trent crosses the southern angle of the county. The Derwent rises in the High Peak, and, passing through Belper and Derby, falls into the Trent at Wilne, on the confines of Leicestershire. The Dove forms the western boundary of the county from Ax-Edge, where it rises to Newton Solney, where it falls into the Trent. The county has also a great extent of canal navigation, —being intersected by the Grand Trunk Canal, the Derby Canal, the Cromford and Nottingham Canal, and several others. The Peak forest and Cromford Canals are connected by a railroad. Derbyshire is divided into 6 hundreds, exclusive of the borough of Derby, and 139 parishes. It returns 6 members to parliament; viz. 4 for the county, and 2 for the borough of Derby. Principal towns and population in 1831,—Derby, 23,607; Belper, 7,890; Chesterfield, 5,775. Population of county in 1831, 237,170. Sum expended for the relief of the poor in 1836, 55,018*l.* Annual value of real property in 1815, 883,370*l.*; profits of trade and professions in ditto, 210,583*l.*

3. *Staffordshire*, an inland county, is bounded on the north by Cheshire; on the east by the counties of Derby and Warwick; on the south by Worcester; and on the west and north-west by Cheshire, Salop, and Derby. It contains 757,760 acres. Aspect very various. The northern part, or the portion of the county lying to the north of a line drawn from Uttoxeter, on the confines of Derbyshire, to Newcastle-under-Lyne, consists principally of moorlands. The hills in

some parts of this district rise to an elevation of about 1000 feet above the level of the sea; sometimes consisting of vast heaps of gravel, and sometimes of huge cliffs having immense masses of rock scattered round their bases. With the exception of some beautiful valleys, the whole of this district is sterile, cold, and dreary. The soil in many places is peat; but in some parts, particularly between the rivers Dove and Churnet, it is of a superior quality, and produces good herbage. The middle and southern parts of the county are agreeably diversified with hills, level lands in pasture and corn, plantations, and gentlemen's seats; but, in its extreme southern angle, the iron works are its most prominent feature. The valley of the Trent is particularly fertile and beautiful. Cannock Heath, immediately to the west of Rugely, contained, in 1813, above 28,000 acres: and is by far the largest of the remaining tracts of waste land in the county. Mr. Pitt estimated the cultivated land, including parks, at 600,000 acres, of which he supposed 100,000 may be meadow and pasture, and 500,000 arable The latter he distributed as follows: viz. 200,000 acres of clay loam, or more friable mixed loam; 200,000 acres of gravelly or sandy loam, or other mixed, including calcareous soils; and the remainder, or 100,000 acres, of light sandy, gravelly, or other soils. — (*Survey*, p. 13.) The air is sharp and cold; and, in the northern parts, particularly, there is a great deal of rain. Stafford is more of a mining and manufacturing than of an agricultural county; but husbandry, though not so far advanced as it might be, is, of late, very considerably improved. Wheat, oats, beans, and barley are the principal crops. The usual rotation on the clay land is, 1st, fallow; 2d, wheat; 3d, beans; 4th, oats; 5th, seeds: on the lighter soils, 1st, turnips; 2d, barley; 3d, wheat, 4th, seeds; 5th, oats. According to returns obtained from the Quarter Sessions, of the 600,000 acres of arable land, 54,000 were in wheat; 36,000 in barley; 45,000 in oats; 15,000 in beans, peas, and vetches; 33,000 in wheat fallow; 17,000 in turnips; and 400,000 in grass. — (*Survey*, p. 225.) The above returns were published in 1813; but since that period the extent of land in fallow has been considerably diminished, and that under beans and turnips increased. Barley, and perhaps oats, has also decreased, while wheat has been augmented. Various important improvements have been effected within the last 20 years, particularly on the estates of the Duke of Sutherland, who has expended large sums on drainage, on the building of new, commodious, and excellent farm houses, and on other substantial improvements. The cattle of Staffordshire are principally of the long-horned breed; but within no very distant period they have been extensively crossed with the short horns; and the stocks of some of some of the principal breeders consist, at present, entirely of the latter. Dairy husbandry is extensively practised; cheese is the principal product, and it is but little inferior to that of Cheshire and Derbyshire. The sheep stock of Staffordshire is estimated at about 187,000, and the produce of wool at about 3,500 packs. Property in estates varying from 10,000*l.* a year down to 40*s.*; farms of all sizes, from 25 to 500 acres, but the smaller class is decreasing; leases frequently granted, but the greater number of farms held at will. Average rent of land, 20*s.* an acre. Coal, iron, and lime are found in the greatest abundance in most parts of the county. It is particularly famous for its potteries and iron founderies. The chief seat of the former is in a district denominated *The Potteries*, between Newcastle-under-Lyne and Norton-on-the-Moors, in which there are several very considerable towns and villages mostly supported by the business. The neighbourhood affords abundance of fire clay and coal: but the finer clays are principally brought from Purbeck in Dorsetshire, soapstone from Cornwall, and flints from the chalk-pits near Gravesend, and from Wales and Ireland. The iron works are situated in the southern angle of the county, in the vicinity of Walsall, Wednesbury, Bilston, &c. Their increase has been quite extraordinary. In 1830, there were, in all, 123 furnaces. The iron produced was estimated at above 212,000 tons, being about double what it had been 10 years before, and very decidedly exceeding all that was produced in all England besides! In this respect, indeed, Staffordshire is exceeded only by South Wales; which has, within these few years, taken the lead in this highly important branch of national industry. The manufacture of locks, nails, edge-tools, bridles, spurs, and an infinity of other hardware articles, is prosecuted upon a very large scale at Wolverhampton, Bilston, and Walsall, and their vicinity. Soho, the famous establishment of Messrs. Boulton and Watt, where there is the greatest manufactory of steam engines in the world, is situated within this county, on its extreme southern border. Glass is also made on the confines of Worcestershire. Hats, shoes, and boots are prepared at Stafford, for exportation as well as home consumption; and cotton mills have been erected at Rochester and other places. Principal rivers, Trent, Dove, and Stour. The Trent and Mersey Canal passes through the county, dividing it into two pretty equal parts; and it is intersected by an immense number of other canals. Staffordshire is divided into five hundreds, exclusive of the city of Lichfield and the boroughs of Stafford and Newcastle-under-Lyne, and 145 parishes. It returns 17 members to parliament; viz. 4 for the county; 2 each for the city of Lichfield and the boroughs of Newcastle-under-Lyne, Stafford, Tamworth, Wolverhampton, and Stoke-upon-Trent; and 1 for Walsall. Principal towns and population in 1831, Lichfield (city), 6,499; Wolverhampton, 24,732; Bilston 14,492; Newcastle-under-Lyne, 8,192; Stafford, 6,956; Burslem, 11,250. Population of county in 1831, 410,485. Sum expended for the relief of the poor in 1836, 92,176*l.* Annual value of real property in 1815, 1,200,325*l.*; profits of trade and professions in ditto, 516,721*l.*

4. *Leicestershire*, an inland county, is bounded on the north by the counties of Nottingham and Derby; on the west by the latter and Warwick; on the south by Northampton; and on the west by Rutland and Lincoln. It contains 515,840 acres, of which 480,000 are arable, meadow, and pasture. Surface varied and uneven; but, except in the district called Charnwood Forest, to the south of Loughborough, the hills do not attain to any considerable elevation, and are flat and tame. Here, however, some of the summits consist of barren rocks. The view from Bardon Hill, on the west side of the forest, is particularly fine. The soil consists principally of strong clayey loam, sandy loam, and very rich meadow. The pastures are excellent, and the propor-

tion of land in grass very much exceeds that under the plough. Leicestershire is famous for its horses, cattle, and sheep; all of which, but especially the last two, were believed to be greatly improved by the skill and persevering exertions of the celebrated Mr. Robert Bakewell, of Dishly, near Loughborough. But it is a singular fact, that the Dishly breed of long-horned cattle, so famous a few years ago, is now every where losing ground; and that comparatively few of them are to be found even in this their native county! The old breed has resumed its place, or, where that is not the case, the improved short horns are now generally the favourites. — (*Youatt on Cattle*, p. 208.) Tillage husbandry not so much improved as breeding and grazing; but the ground is in general clean and kept in good condition. A greater breadth of land is sown with barley than with any other species of grain; but wheat, oats, and beans are all extensively cultivated, and produce excellent crops. On the clay land the rotation is, 1st, fallow; 2d, wheat; 3d, beans: on the loamy soil, 1st, turnips; 2d, barley or oats; 3d, seeds; 4th, wheat. The peculiarly rich, mild cheese, called Stilton, is principally made in this county, in the farms round Melton Mowbray; but, exclusive of this, a great deal of very superior cheese is made in other parts of the county. Its total produce is stated at about 1,500 tons. The Leicestershire sheep consist principally of the old Leicesters, the new Leicesters or Dishly breed, and the Charnwood or forest breed. They all produce long combing wool. The stock is reckoned at about 400,000, and the produce of wool at above 10,000 packs. Horses, well adapted for the saddle or draught, but especially the latter, are reared in considerable numbers. Estates generally large. Farms of all sizes: that of Mr. Bakewell contained between 400 and 500 acres, but there are many from 80 to 100 acres; they are mostly held at will. Tenants strictly prohibited from breaking up old pasture land; and mostly restricted in cultivation to the system of 2 crops and a fallow. Average rent of land, 27*s.* 2¾*d.* an acre. Coal is wrought at Ashby de la Zouch and other places. Iron and lead are also found. Lime of excellent quality is made at Barrow on Soar. Thick and heavy slates, quarried at Swithland, are used for building as well as for roofing. Leicestershire is the great seat of the manufacture of woollen stockings, mitts, caps, &c. In 1833 it was estimated to possess, in all, 11,200 frames. The business is carried on in the towns of Leicester, Loughborough, Hinckley, &c., but more especially in the first: it is not, however, confined to them, but is diffused among most towns and villages of the county. Hats are made at Loughborough, Hinckley, and other places. Lace-making is also introduced; and malt is made in considerable quantities. Principal river, Soar. The county is intersected by the Ashby de la Zouch canal, the Union canal, &c. Owing to the openness of the country and other recommendations, Leicestershire has been long famous as a hunting county, Melton Mowbray, in the centre of the sporting district, has accommodation for a vast number of horses; and during the season is crowded with visiters, foreign as well as native. The county is divided into 6 hundreds, and 216 parishes. It returns 6 members to parliament; viz. 4 for the county, and 2 for the borough of Leicester. Principal towns and population in 1831,—Leicester, 39,433; Loughborough, 10,800; Hinckley, 6,468. Population of the county in 1831, 197,003. Sum expended for the relief of the poor in 1836, 70,077*l.* Annual value of real property in 1815, 951,908*l.*; profits of trade and professions in ditto, 319,608*l.*

5. *Rutland*, the smallest of the English counties, is surrounded by Lincoln, Leicester, and Northampton. It contains 95,360 acres; of which 90,000 are arable, meadow, and pasture. Surface gently varied; air pure; and the soil almost every where loamy and rich. The western part of the county, in which is the celebrated vale of Catmose, is under grass, and the eastern chiefly in tillage. It is particularly celebrated for its wheat, cheese, and sheep. Estates and farms of various sizes. Labourers said to be very well off. Average rent of land, 20*s.* 9½*d.* an acre. The river Welland runs along its south-eastern border, from Rockingham to near Stamford, and there is a canal from the river Soar to Okeham. It is divided into 5 hundreds and 25 parishes; and returns 2 members to parliament, both for the county. In 1831, Okeham, the principal town, contained, with the parish, 2,440 inhabitants. Population of county in 1831, 19,385. Sum expended for relief of the poor in 1836, 7,510*l.* Annual value of real property in 1815, 138,216*l.*; profits of trade and professions in ditto, 30,939*l.*

6. *Northamptonshire*, an inland county, is bounded on the north and north-west by the counties of Lincoln, Rutland, and Leicester; on the west by Warwick and Oxford; and on the south, south-east, and east by Oxford, Bucks, Bedford, Huntingdon, and Cambridge. It contains 650,240 acres, of which about 580,000 are supposed to be arable, meadow, and pasture. The aspect of the county has great variety and beauty. In most parts it is varied by waving hills and gradual declivities, with intervening well-watered vales. There is very little land but what either is or may be rendered useful. The highest hills are in the south-western part of the county, near Daventry, contiguous to which the Nene, the Ouse, and some other rivers have their sources; but their most elevated summit is only about 800 feet above the level of the sea. Soil various, but mostly rich and fertile, consisting principally of various descriptions of loam. Much the largest proportion is of a strong heavy staple, well adapted to the culture of wheat and beans; but there is a good deal of a lighter quality, though, except in a few instances, we do not meet the extremes either of stiff clay or sand. The general excellence of the soil seems to be owing mainly to its depth, and to the dry porous nature of the subsoil, a good deal of which is lime. In the north-east corner of the county there is a considerable tract of rich fen land; and along the Welland and the Nene there are some very fine natural meadows. The climate is reckoned particularly good and salubrious; and there are more mansion houses in this than in any other county. Northampton is pretty equally divided between tillage and grazing. The former is said to be conducted at present as it has been for many years past. The rotation on loams is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat. Ground in general clean and in good condition.—(*Kennedy and Grainger*, vol. i. p. 284.) Principal

corn crops, wheat, barley, and oats; but the first in much the largest proportion. The produce of wheat amounts, at an average, to from 3 to 4 quarters an acre. When sown upon a fallow, it is invariably ploughed in. Beans and turnips extensively cultivated. Mr. Pitt, in his *Survey* of the county, published in 1813, taking the extent of the arable and pasture land, exclusive of forests, woods, &c., at 600,000 acres, supposes it to be distributed as follows: viz. wheat, 60,000 acres; rye, 3,000; barley, 33,000; beans, 30,000; oats, 24,000; peas and vetches, 15,000; green crops, 30,000; fallow, 30,000; and grass land, including clover and seeds, 375,000; making, in all, 600,000 acres. But, though this distribution should have been pretty accurate at the time, which may, perhaps, be questioned, it must now, no doubt, be in several respects rather wide of the mark. Northampton is not distinguished as a breeding county; but large numbers of cattle are purchased from other districts and fattened for the London market, to which it is supposed to send, annually, from 15,000 to 16,000 head. The long horns were formerly the only breed to the raising of which any attention was paid; but the short horns are now beginning to be introduced. There are a considerable number of dairy farms in the south-western parts of the county. The rearing of sheep is a principal object with the Northamptonshire farmers. Breed, long-woolled and much crossed. Stock supposed to be about 640,000, and the annual produce of wool about 16,000 packs. A good many horses, principally of the large black breed are raised. Mr. Pitt estimates the number kept for business and pleasure at 20,000. — (*Survey*, p. 219.) But, this being one of the counties in which it is not unusual to see 5 horses in a team, their number might be very advantageously reduced. Estates generally large; but there are very few large farms. The average size of uninclosed farms used to be about 130 acres, and that of those that were inclosed varied from 180 to 200 acres; but we believe their dimensions have latterly increased. They are usually let from year to year; a species of tenure which, no doubt, contributes materially to perpetuate the routine practices observable in this and other counties. Farm houses and offices, with the exception of some constructed during the present century, mostly inferior, and inconveniently situated, being not unfrequently in villages; and sometimes, indeed, altogether detached from the farm! They are usually thatched. Cottages bad, and mostly huddled together. Average rent of land, 21*s.* 5*d.* an acre. The woodlands in this county are very extensive. They consist principally of the remains of the ancient Royal forests of Rockingham, Salcey, and Whittlebury, with the chaces of Geddington and Yardley. Their extent, including private woodlands, is estimated by Mr. Pitt at 40,000 acres. The proprietors and others adjoining the forests have right to cut the underwood, and to depasture them at certain periods of the year; and it is the opinion of those conversant with the subject, that a *tenth part* of the forest lands, supposing it were well fenced and protected from trespass, would yield more timber than will ever be obtained from the whole under its present management. If we except limestone, which is very abundant, the mineral productions are of little importance. Slates are dug from quarries at Collyweston, near Stamford; they are of a good size, but, being thick and heavy, and disposed to imbibe water, are not much used. Coal is principally imported from Staffordshire, by the Grand Junction Canal; wood is also extensively used as fuel. Large quantities of boots and shoes for the use of the army, and the supply of the London market, are manufactured at Northampton, Wellingborough, and some other places. Lace-making used to afford employment to great numbers of persons in the south-western parts of the county; but this business is now much reduced. Whips are manufactured at Daventry; silk stockings at Towcester; and the latter and some descriptions of woollen stuffs at Kittering. The want of coal is, however, a very serious obstacle in the way of this county ever becoming of considerable importance in manufacturing industry. The Nene, Ouse, and Welland have their sources in Northamptonshire. The Nene rises a little to the west of Daventry, on the confines of Warwickshire, flowing east by Northampton, where it becomes navigable. It then takes a north-easterly course by Thrapstone and Oundle to Peterborough, where it quits the county. The Ouse rises near Brackley, in the southernmost part of the county, which it soon after leaves, but touches it again at Stony Stratford. The Welland rises near Hothorpe, on the confines of Leicestershire; and forms the northern boundary of the county, from Market Harborough to Crowland. Besides these, and other rivers of less importance, the county is intersected by the Grand Junction Canal—a branch from which is carried to Northampton—and by the Derby and Leicester Canal, &c. Northamptonshire has 20 hundreds and 306 parishes. It returns 8 members to parliament; viz. 4 for the county, 2 for the city of Peterborough, and 2 for Northampton. Principal towns and population in 1831, — Northampton, 15,351; Peterborough (city), 5,553; Wellingborough, 4,688. Population of county in 1831, 179,276. Sum expended for the relief of the poor in 1836, 91,901*l.* Annual value of real property in 1815,947,578*l.*; profits of trade and professions in ditto, 185,204*l.*

7. *Warwickshire* lies almost in the centre of England: it is bounded on the south by the counties of Oxford and Gloucester; on the west by Worcester; on the north-west by Stafford; on the north-east by Leicester; and on the east by Northampton. It contains 574,080 acres; of which above 500,000 are arable, meadow, and pasture. The northern and largest part of Warwickshire was formerly an extensive forest, and still retains something of its ancient character, being interspersed with heaths and moors, and sprinkled with woods; but the former have greatly diminished within the last 30 years. The southern portion is, in general, very fertile. Mr Murray estimates the total extent of land in meadow and pasture grass at 235,000 acres, and the extent in artificial grasses at 60,000; making together 295,000 acres — being more than half the county. Of this quantity he supposes that from 80,000 to 85,000 acres are meadows, mown annually for hay; that from 10,000 to 15,000 acres of the artificial grasses are cut green, for horses and other cattle, and made into hay; and that the residue, consisting of from 195,000 to 205,000 acres, is depastured by sheep and cattle. — (*Survey*, p. 128.) Both the dairy and grazing systems are successfully practised; but the former has been

gaining on the latter. The long-horned breed of cattle is preferred for the dairies; the average produce of a cow being about 2¾ cwt. of cheese. Short-woolled sheep have been almost entirely banished from the county. The standing sheep stock is supposed to exceed 342,000, and the produce of wool to be about 8,600 packs. Arable husbandry not so well understood as grazing; and in some districts it is far behind. Wheat, barley, oats, and beans are extensively cultivated. The first is generally drilled; and, when such is the case, it is not a little singular that turnips should be almost every where sown broadcast! Beans generally dibbled. The system of top-dressing is more commonly followed in this than in any other county. Estates of various sizes; some very large, and others small. Farms vary from 80 to 500 acres; but the smaller class predominate so much that the average is not supposed to exceed 150 acres. Old inclosures average about 10 acres, new about 15. Leases getting more uncommon; and farms mostly held from year to year. Tenants bound not to exceed three crops to a fallow; but there is no restriction as to the quantity of wheat sown. Average rent of land, *22s. 5½d.* an acre. Little can be said in favour of the farm buildings. The old houses and offices were sometimes built of timber; sometimes the walls were of stone, and sometimes of mud or clay, and thatched; they are in general injudiciously placed, ill planned, and inconvenient. The new farm houses and offices are of brick, covered with tile, and are very substantial; but conveniency is said not to be much studied. There are no open sheds for wintering cattle, nor feeding sheds for soiling with turnips and other green food. — (*Survey*, p. 30.) Coal is wrought to a considerable extent at various places; but Birmingham is supplied with coal brought by canal from Staffordshire. Warwick ranks high as a manufacturing county. Birmingham is the principal seat of the hardware manufacture; and no where, perhaps, has the combined influence of ingenuity, skill, and capital been more astonishingly displayed than in the immense quantity, variety, beauty, utility, and cheapness of the articles produced in this great workshop. Coventry has been long distinguished for its proficiency in the silk trade, particularly in the manufacture of ribands. Needles and fish-hooks are made at Alcester; hats at Atherstone; and flax mills have been erected near Tamworth and in other places. Principal rivers, Avon, Tame, Alne, and Leam. The Birmingham and Fazely Canal runs along the north-west side of the county; and it is intersected by the Warwick and Birmingham Canal, the Warwick and Napton Canal, the Oxford Canal, &c. A rail-road from London to Birmingham, and thence to Manchester, has been planned, and is now, indeed, in a considerable state of forwardness. The county is divided into 4 hundreds and 4 subsidiary districts, and contains 205 parishes. It returns 10 members to parliament; viz., 4 for the county, and 2 each for the city of Coventry and the boroughs of Birmingham and Warwick. Principal towns and population, in 1831, — Birmingham, 146,986; Coventry (city) 27,070; Warwick, 9,169; Stratford-on-Avon, famous as the birthplace of Shakspeare, 3,488. Population of county, in 1831, 336,988. Sum expended for the relief of the poor, in 1836, 116,404*l.* Annual value of real property, in 1815, 1,269,757*l.*; profits of trade and professions, in ditto, 669,370*l.*

8. *Worcestershire*, an inland county, having a very irregular outline, and several detached portions, is bounded on the north by the counties of Salop and Stafford; on the west by Hereford; on the south by Gloucester; and on the east by Warwick. It contains 462,720 acres; of which about 400,000 are arable, meadow, and pasture. Surface beautifully diversified: the Malvern Hills divide the south-west part of the county from Herefordshire; the Bredon Hills, to the south of Pershore, have an elevation of near 900 feet; and there are also some considerable hills on its northern frontier, between Hales Owen and Bromsgrove. The vales of Worcester and Evesham, or rather the vales of the Severn and Avon, particularly the latter, are very fertile and beautiful; but the soil in many parts, especially on the eastern side of the county, is cold and poor. Besides cattle and dairy produce, Worcestershire produces large quanties of fine wool, apples, hops, and excellent cider. Agriculture is in a very backward state. "The system followed is, in itself, a bad one, and is carelessly and negligently conducted. There is no rotation as to cropping; nor are any pains taken to relieve the ground from water, though it is in most places very wet. Ploughing is badly performed, and the whole management of a slovenly description."—(*Kennedy and Grainger*, vol. i. p. 358.) In 1834, there were 1849 acres of hops. Estates variously divided; farms, for the most part, small. Average rent of land, 22*s*. 4*d*. an acre. Coal is found in the northern part of the county; and the brine springs at Droitwich supply vast quantities of salt. The city of Worcester is the principal seat of the leather glove manufacture; the iron, hardware, and glass manufactures are carried on with spirit and success at Dudley; and Kidderminster is famous for its carpets. Principal rivers, Severn, Tame, and Avon. Worcestershire is divided into 5 hundreds and 171 parishes. It returns 12 members to parliament; viz., 4 for the county; 2 each for the city of Worcester and the borough of Evesham; and 1 each for Kidderminster, Bewdley, Droitwich, and Dudley. Principal towns and population, in 1831,—Worcester, a very well built city, 18,610; Dudley, 23,043; Kidderminster, 20,865; Stourbridge, 6,148. Population of county, in 1831, 21,356. Sum expended for the relief the poor, in 1836, 58,788*l*. Annual value of real property, in 1815, 820,021*l*.; profits of trade and professions, in ditto, 273,303*l*.

9. *Gloucestershire*, a maritime county, is bounded on the south by the counties of Wilts and Somerset; on the east by Berks, Oxford, and Warwick; on the north by Worcester; on the west by the latter, Herefordshire, Monmouth, and the channel of the Severn. It contains 805,120 acres; of which 750,000 are arable, meadow, and pasture. It is naturally divided into the Cotswold, Vale, and Forest districts. The first, or Cotswold district, comprises the hilly country, stretching from Chipping Camden, on the confines of Warwickshire, to near Bath. It is often divided into the Upper and Lower Cotswolds. The vale takes in the lowlands from Stratford-on-Avon to Bristol: it is usually divided into the vales of Evesham, Gloucester, and Berkeley; but, perhaps, a better division would be into the vales of Severn and Avon. The former comprehends all the low country between Tewkesbury and Bristol; and the latter, the lowlands be-

tween the Upper Cotswolds and the Avon, from Tewkesbury to Stratford, wherever that river is a boundary of the county. The Forest district includes the parishes on the west side of the Severn up to Gloucester, and, afterwards, on the west side of the river Leden till it enters the county of Hereford. This district derives its name from the Royal Forest of Dean, once of large extent, but now much reduced by grants to individuals, and by the progress of cultivation. It still, however, contains a good deal of valuable timber. The soil in the vales is extremely fertile; but in the other districts it is, for the most part, sandy and poor. Climate of the vale remarkable for its mildness: according to William of Malmesbury, who flourished in the 12th century, it produced wine but little inferior to that of France! The air on the Cotswolds is keen and sharp. About 300,000 acres are under tillage. Agriculture not very advanced. Wheat, barley, oats, and beans are the crops principally cultivated. Beans mostly produced on the clay soils of the vales, and much depended on by the farmer. Mr. Rudge says, that "the slovenly way in which a great deal of the vale land is cultivated, occasions *the loss of* 1 *in* 3 *or* 4 *crops* (from excess of fallowing); and even with this management the lands are not clean."—(*Survey*, p. 105.) In the vales, 6 and 7 horses are not unfrequently seen in a team! A large extent of the best land is occupied as meadows, pastures, and orchards. The most valuable meadows lie along the banks of the Severn below Gloucester, being defended from inundation by banks or sea walls constructed for that purpose. At certain periods, however, the lands are allowed to be overflowed; and, when the water speedily retires, its influence in increasing the supply of herbage is said to be very great. It is not unusual to cut from these meadows from 2 to 2½ tons of hay an acre in a season. Gloucestershire has been long famous for its dairies, particularly those in the vale of Berkeley, which produce the greatest and best part of the excellent cheese known by the name of double and single Gloucester. All sorts of cattle are met with in the dairies; the beauty of the animal being reckoned of inferior importance to its quality as a milker. A good cow will yield from 3½ cwt. to 4½ cwt. of cheese in a season. The average yield of a dairy of 20 cows may be estimated at 4 cwt. a cow; in all 4 tons. The native sheep of the Cotswold Hills are large, and produce coarse long-combing wool; but the pure breed is become scarce, in consequence of its intermixture with new Leicesters, South Downs, &c. The total stock of sheep in the county is estimated at about 550,000,. and the annual produce of wool at about 15,550 packs. Cider is the principal product of this county. Almost every farm has an orchard; but those where cider is made for sale are found only on the sides of the hills, and in the vale and forest lands. The highly esteemed species of cider called Styre is almost peculiar to the western banks of the Severn. It is strong, and, when new, is extremely harsh, so that it requires to be kept for several years before it is sufficiently mellowed for use. Property much divided; estates being of all sizes, from 10,000*l.* a year down to 5*l.* or less. Some large, but many small, farms: their average rental may be from 200*l.* to 400*l.* Average rent of land, 20*s.* per acre. Iron ore is abundant in the

Forest of Dean; and, owing to the convenient supply of timber, it used to be worked to a considerable extent. But, notwithstanding there is also abundance of coal in the Forest, the production of iron is now almost abandoned; South Wales and Staffordshire having decidedly greater facilities for carrying on the business. Veins of lead ore are found in the limestone rocks in the lower part of the vale. Gloucester is a very considerable manufacturing county, and is particularly celebrated for its fine broad cloths; latterly, however, Yorkshire has been gaining upon it in this department. Tin plates, brass, glass, pins, soap, refined sugar, &c. are extensively manufactured, especially at Bristol and its vicinity. Principal rivers, Severn, Wye, Upper and Lower Avon, Thames, or Isis, &c. The Severn flows through the county from Tewkesbury, past Gloucester, Berkeley, &c. The Wyeand the Lower Avon divide it; the former from Monmouthshire, and the latter from Somerset. The Cotswold Hills divide the waters that flow into the Severn from those that flow into the Thames. The principal source of the latter, or, rather, of the Isis, is from 3 to 4 miles south-west of Cirencester; after receiving the Churn, the Coln, &c., it becomes navigable at Lechlade, on the confines of Berkshire. —(See *ante*, p. 30.) The county is intersected by the Thames and Severn Canal, the Gloucester and Hereford Canal, &c. The ship canal, already referred to (*ante*, p. 35.), from Berkeley pill to Gloucester, has rendered the latter a shipping port of considerable and increasing consequence. A good deal of the import and export trade of Warwickshire is now carried on by this channel. A railway has been constructed between Cheltenham and Gloucester. Bristol used to rank next to London as a commercial city; but, though now far surpassed by Liverpool, and perhaps, also, by Hull, she still continues to enjoy an extensive foreign trade. Gloucestershire is divided into 28 hundreds and 339 parishes. It returns 15 members to parliament; viz. 4 for the county; 2 each for the cities of Bristol and Gloucester, and the boroughs of Cirencester, Stroud, with the adjoining parishes, and Tewkesbury; and 1 for Cheltenham. Principal towns and population, in 1831,—Bristol (city) 103,886 *; Cheltenham, 22,942; Stroud, 8,607; Gloucester (city) 11,933; Tewkesbury, 5,780. Population of county, in 1831, 386,904. Sum expended for the relief of the poor, in 1836, 116,185*l.* Annual value of real property, in 1815, 1,315,726*l.*; profits of trade and professions, in ditto, 367,243*l.*

10. *Oxfordshire*, an inland county, of a very irregular shape, is bounded on the north by the counties of Northampton and Warwick; on the West by Gloucester; on the south by Berks; and on the east by Buckingham. It contains 483,840 acres; of which above 400,000 are said to be arable, meadow, and pasture. Surface irregular and elevated. The soil of the part of the county from North Ashton to its extreme northern angle consists principally of a red, rich, deep, friable loam. The soil in the middle part of the county, or the tract lying between the one now mentioned and the Isis on the south, is

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* Bedminster parish, in Somersetshire, forms part of the suburbs of Bristol. It contains 13,130 inhabitants; making the entire population of the city 117,016.

comparatively unproductive; being, for the most part, shallow, sandy, or gravelly, and poor, particularly the portion called Whichwood Forest; but along the Isis and other rivers there are extensive tracts of rich meadow land. The southern portion of the county, or that lying south-east from the city of Oxford, includes the Chiltern Hills. The soil in this portion is very various; but that which is thin and chalky predominates. Most part of Oxfordshire is in tillage; but this is not by any means in an advanced state. Some material improvements have been introduced within the last 30 years; but the management is still, in various respects, essentially defective. The principal dependence of the tillage farmer is on his barley, the crops of which, particularly in the northern part of the county, are very abundant; frequently yielding from 6 to 7 quarters an acre: it is reckoned equal, if not superior, to any other barley for malting; and large quanties of malt are made; mostly, of course, for the London market. Turnips are raised in most parts of the county. The usual rotation is, 1st, turnips; 2d, barley; 3d, seeds, which remain for 2 years; 4th, wheat. Dairy husbandry extensively practised, and better understood than tillage. Butter the principal product. Sheep of various breeds; but at present they are almost all long-woolled. Stock estimated at about 300,000, and the total produce of wool at about 6,300 packs. There are but few large estates; and farms are generally smaller than in most other counties. Leases granted for 7 or 14 years. Tenants not bound to adopt any particular mode of cultivation, nor are they restricted in the sowing of wheat. Hence, in many instances, farms, towards the end of a lease, are in a very worn out, exhausted state; and the land is in general far from being in the condition required by good husbandry. Average rent of land, 20*s.* 6¾*d.* an acre. The manufactures of Oxfordshire are but of little importance. Witney is, however, celebrated for its superior blankets, and Woodstock for its gloves. Principal rivers, Isis and Thame, which, having joined a little above Wallingford, take the name of Thames; with the Evenlode, Cherwell, Windrush, &c. The Isis and Thames bound the entire south-western frontier of the county, from near Lechlade to the immediate vicinity of Reading. The Oxford Canal joins the Thames and the Grand Junction Canal. Oxfordshire is divided into 14 hundreds and 217 parishes. It returns 9 members to parliament; viz. 3 for the county, 2 for the city, and 2 for the university of Oxford, and 1 each for the boroughs of Banbury and Woodstock. Principal towns and population, in 1831,— Oxford, a city, and the seat of the famous university of the same name, 20,434; Banbury, 3,737. Population of county, in 1831, 151,726. Sum expended for the relief of the poor, in 1836, 77,322*l.* Annual value of real property, in 1815, 790,866*l.*; profits of trade and professions, in ditto, 312,809*l.*

11. *Buckinghamshire*, an inland county, is bounded on the north by the county of Northampton; on the east by the counties of Bedford, Herts, and Middlesex; on the south by Berks; and on the west by Oxfordshire. Its shape is very irregular. It contain 472,320 acres; of which 440,000 are supposed to be arable, meadow, and pasture. Surface finely diversified. The rich vale of Aylesbury

occupies the middle of the county, having the Chiltern Hills running north-east and south-west along its southern side, and a nearly parallel range of sand hills along its northern side. The prevalent soils are rich loam, strong clay, chalk, and gravel. It is about equally divided between tillage and pasture. Agriculture in a backward state. Tenants seldom under any restrictions as to cropping, and allowed to carry away hay and straw. In consequence, the land is very often overcropped and exhausted; and an entering tenant is frequently obliged to purchase the preceding year's crop, for the sake of the manure. Turnip husbandry chiefly confined to the hills. Wheat and beans are the principal crops raised on the low grounds; and they frequently follow each other, without the intervention of a fallow, for a lengthened period. There are few counties in which there is so great a waste of horse power. The grass lands and rich meadows in the vale of Aylesbury and other parts, are used partly and principally for the dairy, and partly for fattening; but a great deal of hay is also sent to the metropolis. The stock of dairy cows is estimated at about 27,000, of which it is supposed that 21,000 are always productive. Butter the chief product; and it is supposed that from 4,000,000 to 4,500,000 lbs., or about 1,950 tons, are annually produced for sale in this county. It is almost entirely sent to the London market. The fattening of cattle is principally confined to the vale of Aylesbury; the excellence of the pasture being such as speedily to make a visible alteration in the size and appearance of every animal sent to it. Both the dairy and grazing cattle consist almost entirely of short horns. Great changes have been made, during the last 30 years, in the breed of sheep in this county; so much so, that the average weight of the fleece is supposed to have been increased, in that period, from 3 to 5 lbs.! The present sheep stock is estimated at above 220,000, and the produce of wool at above 4,600 packs. Hogs are an important article in the rural economy of Buckinghamshire, on account of the refuse milk from the dairies. Ducks are raised in large quantities at Aylesbury. Cottages generally good, and most of them have gardens attached. There are some large estates: size of farms various; average about 180 acres. Leases not general. Average rent of land, 21*s.* 1¼*d.* an acre. Cross roads said to be in a very bad state. Minerals of none, and manufactures of but little, importance. The manufacture of pillow-lace, once very generally diffused, has declined materially, in consequence of the wonderful increase of bobbinet, or machine lace, at Nottingham. A good deal of straw plat is made in the parts of the county nearest to Bedfordshire; and there are some paper mills in the neighbourhood of Wycombe. The Thames runs along the southern border of the county, dividing it from Berkshire. The Ouse partly intersects and partly bounds the northern division of the county; and the Thame has its sources among the high grounds to the north of the vale of Aylesbury. The Grand Junction Canal intersects the county on the east, having branches to Buckingham, Aylesbury, and Wendover. Bucks is divided into 8 hundreds and 202 parishes. It returns 11 members to parliament; viz. 3 for the county, and 2 each for the boroughs of Buckingham, Aylesbury, Marlow, and Wycombe. Principal towns and population, in 1831,—High Wycombe, 6,299; Aylesbury, 4,907; Buckingham, 3,610. Population of county, in 1831, 146,529. Sum expended for the relief of the poor, in 1836, 74,436*l.* Annual value of real property, in 1815, 662,872*l.*; profits of trade and professions, in ditto, 222,982*l.*

12. *Bedfordshire*, an inland county, and the last of the midland district, is bounded on the north-west by the county of Northampton; on the west by Bucks; on the south by the latter county and Herts; on the east by the latter and Cambridge; and on the north-east by Huntingdon. It contains 296,320 acres; of which about 250,000 are arable, meadow, and pasture. The face of the county presents an alternation of gently rising hills, and beautiful, well-watered, extensive vales. The southern angle is occupied by the Chiltern Hills. There is every variety of soil, from the stiffest clay to the lightest sand. To the north of the chalk district, a belt of sand extends from Leighton Buzzard, on the border of Bucks, north-west, across the county to Potten. The breadth of this belt varies from 1 to 5 miles; it is of varying degrees of fertility, and is particularly well suited for horticultural purposes, and for the turnip husbandry. The soil in the vale of Bedford consists mostly of clay. In the northern part of the county, the soil is mostly of a blackish colour, gravelly, light, and poor. On the whole, however, the soil seems, speaking generally, to be of about an average degree of fertility. So late as 1770 it was estimated that nearly three fourths of the surface consisted of "open or common fields, common meadows, and common or waste lands." But the greater part of these lands have since been enclosed, subdivided, cultivated, and improved, to the great profit and advantage of those concerned, as well as of the public. This change was effected principally through the exertions and example of Francis Duke of Bedford. Land chiefly under tillage. Agriculture in a medium state of advancement. On the sandy and chalky soils, turnips, particularly the Swedish variety, succeed very well, and are extensively cultivated. No regular rotation is observed. On the clays, beans and wheat are the principal produce; on the light soils, turnips, barley, seeds, and wheat usually follow each other; on the loams, beans or oats are generally sown after wheat. The drill is in extensive use, and a good deal of wheat is dibbled. Clay used as a manure for the sandy soil with good effect. At an average, each plough in the county is believed to be wrought by rather more than 3 horses. In the parishes of Sandy (so called from its soil), Gritford, and other places, there are extensive market-gardens, in which large quantities of vegetables are raised for the supply of London, Cambridge, &c. Cattle of a mixed breed, and "without any pretensions to very peculiar excellence." Sheep in the same predicament as cattle. Stock of the former estimated at about 200,000, and the produce of wool at about 4,250 packs. There are some large estates; but property is, notwithstanding, considerably divided. Average size of farms about 150 acres. They are mostly held from year to year; but some are held under leases, generally of 7, but, in a few instances, of 10 and 14 years. It is stated by Mr. Bachelor, in his able *Report* on the county (p. 41.), that some of these leases may be cancelled on half a year's warning being given

by either landlord or tenant! Of course, it is not to be expected that any improvements should be effected by tenants holding under such a tenure. Farmers in the northern district said to be very poor. Farm buildings indifferent, and, for the most part, inconveniently situated: they are generally kept in repair by the landlords. Average rent of land, 18*s*. 4¾*d*. an acre. Fuller's earth procured in the neighbourhood of Woburn. Formerly a good deal of pillow-lace was made; but this business has here, as well as in Bucks, been materially injured by improvements in the manufacture of Nottingham lace. Straw plat for hats, of a quality inferior only to that brought from Tuscany, is made in large quantities at Dunstable, and generally in all the southern parts of the county. Principal rivers, Ouse and Ivell; the former enters the county at Turvey, on the borders of Bucks, and leaves it at St. Neot's, on the confines of Huntingdonshire. The distance between these two places, in a direct line, is from 18 to 19 miles, but the windings of the river are such, that the distance by water is above 45 miles. Bedfordshire is divided into 9 hundreds and 123 parishes. It returns 4 members to parliament; viz. 2 for the county, and 2 for the borough of Bedford. Principal towns and population, in 1831,—Bedford, 6,959; Biggleswade, 3,226; Leighton Buzzard, 3,330: Luton, 3,961. Population of county, in 1831, 95,383. Sum expended for the relief of the poor, in 1836, 46,524*l*. Annual value of real property in 1815, 364,277*l*.; profits of trade and professions, in ditto, 94,797*l*.

Eastern District.

1. *Lincolnshire*, a maritime county, being the second in England in point of extent, and the first in point of fertility: it is bounded on the north by the estuary of the Humber; on the east by the German Ocean and the arm of the sea called the Wash; on the south by the counties of Cambridge, Northampton, and Rutland; and on the west by Leicester, Nottingham, and York. It contains 1,671,040 acres; of which 1,465,000 are said to be arable, meadow, and pasture; and is divided into the three districts of *Lindsey*, *Kesteven*, and *Holland*. The first comprises almost the whole country from the Foss dyke and the Witham north to the Humber, being fully half the county. The soil of this district is very various. Along the coast, and in its north-west angle, consisting of the district called the Isle of Ancholme, formed by the rivers Trent, Idle, and Ouse, there is a considerable extent of rich marsh and fen land. The extensive tract called the Wolds stretches from Spilsbury north to Barton on the Humber: its soil is principally sandy loam on a chalk bottom, of very various degrees of fertility, but now generally producing excellent crops. From Lincoln north to Manton there is a tract of heathy ground, but it also has been much improved, and is very productive of oats. The district of Kesteven occupies the south-western part of the county. There are some heathy and some marshy lands in this district; but, in general, it is dry and fertile. The district of Holland occupies the remainder, or south-eastern part, of the county round the Wash. Like the Continental state of the same

name, it consists almost entirely of low marsh and fen land; the marsh being the portion nearest to the sea, and the fen that which lies more inland. It is principally included within what is called the Great Level of the Fens (see *antè*, p. 28.); being defended from the sea, and from the overflowing of the rivers, by immense embankments. In a few places, the fens and marshes continue nearly in their natural state; but in general they have become, through the long continued and well directed efforts that have been made for their drainage and improvement, sound and dry; and constitute one of the most productive tracts in the kingdom. Round the Wash, a great deal of very fine land has been gained, within the last 50 years, from the sea; and the embankments are gradually extending. But, though remarkably fertile, the marshes and fens are devoid of beauty; the water is also, in general, brackish, and the climate far from salubrious. At an average, Lincolnshire produces more beef and mutton than any other county of the empire. In some parts of the marsh, the pasture is so excellent that it will feed 6 sheep an acre, and 4 bullocks to 10 acres. Exclusive of the vast outlay on embankments and drains, improvements of all sorts have been prosecuted in Lincolnshire for a good many years past, on a very large scale, and with a degree of enterprise and success that has not been exceeded, if equalled, in any other county. In the best parts of the fens and marsh under tillage, the crops chiefly cultivated are oats and wheat: the usual rotation is, 1st, cole; 2d, oats; 3d, wheat: the latter, if not sown in that course, produces too much straw to be a profitable crop. Undoubtedly, however, the marsh land is decidedly better fitted for grazing than for cropping; and it is to be regretted, that the very high prices obtained for corn during the latter years of the war should have tempted the owners and occupiers of some pretty considerable tracts of marsh land to subject them to the plough. This was soon found to have been a very unwise proceeding; but it is no easy matter to get the inferior sorts of fen and marsh land, after they have been cropped for a while, restored, in good order, to grass. Beans are not much grown in any part of the county; but, when resorted to, they are sown after wheat, for the the same reason that makes wheat be sown after oats; but a second oat crop is, more frequently than any other, taken after wheat. The farms in the wolds and moorish district are very extensive. Large tracts that, 30 years ago, were comparatively worthless, are now in the highest state of cultivation, and yield the finest crops. All kinds of grain, but in particular barley, are produced in the greatest abundance. This extraordinary improvement has been principally brought about by the liberal use of bone manure, which has been employed for a longer period, to a greater extent, and with better effect, on the wolds and moors of Lincolnshire, than in any other part of the kingdom. The usual rotation is, 1st, turnips; 2d, barley or oats; 3d, seeds; 4th, wheat. The turnip husbandry is here prosecuted on a greater scale than in any other part of England. A single farmer (Mr. Dawson, of Withcall, near Louth) has usually about 600 acres in turnip. He dresses entirely with bone manure; and, since its introduction, the crops of turnips on the wolds have become from 5 to 10 times heavier than formerly; and the productiveness of other crops, and of the pasture, has been increased in a corresponding ratio.* Large quantities of chalk and rape dust are also laid upon the light lands; and it is the practice in the fens to dress with clay. In consequence of the richness of its pastures, Lincolnshire has been long celebrated for its breed of horses, cattle, and sheep. Some of the finest dray horses seen in London are bred in the fens. The cattle are a coarse, large sort of short horns; but they have latterly been a good deal improved by crossing with the Teeswater breed. The native sheep of the fens are remarkable for their great size, and for the extraordinary length of their wool. They have, however, been so much crossed with the new Leicesters, that it is now difficult to meet with a Lincoln sheep of the genuine county breed. The carcase of the present breed of sheep is not so large, nor is their wool so long, or their fleece so heavy, as that of the old native breed; but they are less coarse and bony, fatten earlier, and suit the purposes of the butcher much better. The stock of sheep in Lincolnshire is very large, being estimated at upwards of 1,800,000, of which above 1,300,000 are marsh sheep, producing fleeces weighing 9 lbs. each at an average: the average weight of the fleeces of the others is estimated at 6 lbs. The total produce of wool exceeds 62,000 packs. Previously to the drainage of the fens, they were frequented by immense numbers of aquatic wild fowl; and vast quantities of geese were bred and reared in them. The business is now much fallen off; but in some places it is still carried on to a considerable extent. The quills and feathers are very valuable. The geese are plucked 4 or 5 times a year; but, barbarous as this practice may appear, the operation, when performed at the proper season, is said to be less painful and injurious to the bird than might be supposed. Decoys for the taking of wild ducks, teal, widgeons, &c. were also, at one time, very common in the fens; but a few only exist at present.† About thirty-five years ago, large tracts in the wolds were occupied as rabbit warrens; but these nuisances, as they were justly called by Mr. Young, are now well nigh abated, and the lands brought into a profitable course of tillage. In 1834, there were 562 acres under hops. Property in Lincolnshire very variously divided. Estates of all sizes, from 25,000*l.* a year down to 5*l.*; but the great majority small. In the island of Ancholme, the inhabitants live together in hamlets or villages, as in France; and almost every house, except very poor cottages on the borders of commons, is inhabited by the proprietor and occupier of a farm of from 1 to 50 acres; which is cultivated with the greatest care and attention. Mr. Young says that these little proprietors are very happy; but he adds, that he was informed that "they work like negroes, and do not live so well as the inhabitants of a poor-house."—(*Survey of Lincolnshire*, 2d ed. p. 20.) Size of farms as various as that of estates. In the wolds and moorish district they are, as already stated, very large; but, taking the county at an average, the number of large ones bears no sort of proportion to the number of those that are small. They are generally held under leases of 7 and 14 years. The occupiers of large farms are distinguished for their intelligence and enterprise. " I have not seen a set more liberal in any part of the kingdom. Industrious, active, enlightened, free from all foolish and expensive show, or pretence to imitate the gentry, they live comfortably and hospitably, as good farmers ought to live; and, in my opinion, are remarkably void of those rooted prejudices which sometimes are reasonably objected to this race of men. I met with many who had mounted their nags, and quitted their homes, purposely to examine other parts of the kingdom; had done it with enlarged views, and to the benefit of their own system of cultivation." — (*Young's Survey*, p. 48.) Farms in the fenny districts are but indifferently supplied with offices; the walls of many of them are formed of a mixture of stubble and clay. Cottagers, on many estates, have cows, with small pieces of ground, and are said to be comparatively comfortable. Average rent of land, 18*s.* 11*d.* an acre.* Manufactures and minerals of no importance. Stamford, in this county, is one of the few places which have the custom of *Borough English;* that is, a custom according to which the youngest son, if his father die intestate, succeeds to the paternal property, to the exclusion of the elder branches. Principal rivers, Trent, Witham, Welland, and Ancholme. The Witham has been made navigable from Boston to Lincoln; and the Foss dyke canal extends from the latter city to the Trent, near Torksey, completing the important internal navigation between the Wash and the Humber. The Foss dyke canal was first excavated by the Romans; several of whose works for embanking and draining in this county still exist, and attest the power and sagacity of their undertakers. The Foss dyke navigation was re-opened in the reign of Henry I.; and has recently been deepened and otherwise improved. There are, also, canals from the Witham to Horncastle and Sleaford; and from Titney Haven, on the east coast, to Louth. Lincolnshire contains, exclusive of the three great divisions already noticed, 33, hundreds, wapentakes, and sokes, with the city of Lincoln, and the boroughs of Stamford, Boston, and Grantham. It is divided into 629 parishes. It returns 13 members to parliament; viz. 4 for the county; 2 for the city of Lincoln; 2 each for the boroughs of Boston, Grantham, and Stamford; and 1 for Great Grimsby. Principal towns and population in 1831, — Lincoln (city) 12,634; Boston, 12,818; Grantham, 7,448; Stamford, 7062. Population of county in 1831, 317,244. Sum expended for the relief of the poor in 1836, 131,685*l.* Annual value of real property in 1815, 2,096,611*l.*; profits of trade and professions in ditto, 373,672*l.*

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* *Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 269.; *British Husbandry*, p. 400.

† For an account of the breeding of geese in the fens, and of the construction of decoys, &c., see *Pennant's British Zoology*, arts. "Grey Lag Goose," and "Mallard."

2. ***Huntingdonshire***, a small inland county, surrounded by the counties of Northampton, Cambridge, and Bedford. It contains 238,080 acres; of which 220,000 are arable, meadow, and pasture. Surface in the western and southern parts gently varied; but the north-eastern portion, adjoining Cambridgeshire, is mostly included

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* We incline to think that, owing to the great improvements effected during the last twenty years, the rent of Lincoln is greater at this moment than in 1810; and that it may be moderately estimated at 20*s.* or 21*s.* an acre.

within the Great Level of the Fens. Soil various, but for the most part very good. Such of the fens as have been properly drained are said to be peculiarly fertile; but, owing, as is alleged, to a defect in the plan on which the drainage is conducted, it is in general but very imperfectly executed; and it requires a heavy outlay to keep the country from being inundated. The whole upper part of the county was at one time a forest; but timber is now scarce. The fens are principally devoted to grazing; the remainder of the county being about equally divided between tillage and pasturage. Agriculture is far from being in an advanced state. The land in this county and Cambridgeshire is ploughed in immense ridges, by which a good deal of it is wasted; and it is, besides, very often foul, overcropped, and out of order. Chief crops, wheat, oats, and beans. Rape and mustard are both rather extensively raised. Turnips are confined to a few elevated spots. The stock of cattle is estimated at from 9,000 to 10,000. They were formerly of mixed and generally inferior breeds: but recently they have been materially improved by the introduction of short horns. In various places a good deal of very fine cheese, and in others of butter, is made.* The stock of sheep is estimated at 195,000; which are supposed to produce nearly 4,500 packs of long-combing wool. Pigeon-houses are more abundant in this than in any other county, except Cambridge. Fuel scarce: the poorer inhabitants mostly burn turf and what wood they can get; but the latter is far from plentiful. Estates generally extensive. Many large farms, but small ones predominate; they ere mostly let from year to year. Average rent of land, 16*s.* 11½*d.* an acre. Minerals and manufacturers of no importance. The Ouse enters the county at St. Neot's, flows north to Huntingdon, and then east to St. Ives, and along the border of Cambridgeshire to Louth. It is every where navigable. The Nene divides the county from Northamptonshire. There are in the fens two shallow lakes, called Whittlesea Mere and Ramsey Mere; the first containing about 1,570 acres, and the latter about half as many. Springs are deficient; and water for household purposes is mostly obtained from ponds. Huntingdonshire is divided into 4 hundreds, exclusive of the town of Huntingdon, and 103 parishes. It returns four members to parliament, viz. 2 for the county and 2 for the borough of Huntingdon. The principal town, Huntingdon, has 3,267 inhabitants. Population of county in 1831, 53,149. Sum expended for the relief of the poor in 1836, 27,273*l.* Annual value of real property in 1815, 325,964*l.*; profits of trade and professions in ditto, 108,401*l.*

3. *Cambridgeshire*, an inland county, is bounded north by Lincolnshire; east by the counties of Norfolk and Suffolk; south by those of Essex and Hertford; and west by those of Bedford, Huntingdon, and Northampton. It contains 548,480 acres, of which 500,000 are arable, meadow, and pasture. The southern and northern parts of this

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* It is usually held, that Stilton cheese was first made in this county, in the parish of Stilton, whence it took its name: but, in point of fact, it was originally made in Leicestershire, where it continues to be produced in the greatest quantity; and derived its name from its being first brought into notice at an inn on the great north road, in the parish of Stilton. — (*Youatt on Cattle*, p. 208.)

county have a very different aspect. Almost the whole country north of a line drawn from Newmarket, on the border of Suffolk, to Connington, on the border of Huntingdonshire, is quite flat, and, indeed, included with the Great Level of the Fens, of which it makes nearly a half. That part of the fens which lies to the north of the river Ouse consists principally of the district called the Isle of Ely, having a separate jurisdiction within itself. The part of the county to the south of the line, already mentioned, has a finely diversified surface. Soil of the fens mostly rich, black, and deep, but in some places it is clayey and sandy. In the uplands the soil is very various; in some parts clayey and loamy, and in others chalky, gravelly, &c. The fens have been rendered habitable only by dint of vast works, consisting partly of drains or canals, for collecting and carrying off the water, and partly of embankments, to hinder the inundation of the rivers, which are generally at a higher level than the surrounding fens. The water collected by the drains, with which every part of the county is intersected, is raised into the rivers by means of pumps, that were formerly wrought wholly by windmills, but which are now, in a few instances, wrought by steam-engines. About a third part of the county is under tillage, which is very similar to that of Huntingdonshire. Oats, wheat, and potatoes are extensively grown in the fens; and it is said that nearly a fourth part of the fen lands in cultivation is sown with cole, not for the sake of its seed, but to serve as green food for sheep. Considerable quantities of hemp and flax are also raised in the fens. All sorts of corn crops, but more especially barley, are produced in the more elevated districts. Great numbers of cattle, and of long-woolled sheep, are grazed in the fens; and the southern part of the county, particularly the valley of the Cam, along the banks of which are some very fine meadows, has been long famous for its dairies. The butter of Cambridgeshire is reckoned equal to almost any made anywhere in England; it goes mostly to London, where it is sold as Epping butter. The large thin cream cheese, made in Cottenham and the immediately contiguous parishes, is highly esteemed. Its superiority is not said to be owing to any particular management in the dairies, but to the nature of the herbage. Heavy dray and cart-horses are extensively bred. The stock of sheep is estimated at about 110,000, of which about 42,000 are long-woolled; producing fleeces of the average weight of 8lbs. each. The rest of the sheep are short-woolled, and are kept principally in the south-eastern part of the county, where there are some extensive sheep walks. The total produce of wool is about 2,650 packs. There is a pigeon-house on almost every farm; the produce of a single "pigeonry" frequently exceeds 100,000 dozens a year! Some large estates; the greatest part of the county in estates from 200*l.* to 500*l.* and 1,000*l.* a year: many worth from 20*l.* to 50*l.*, and even 400*l.* a year, occupied by their owners. Size of farms very various; mostly from 20 to 100 acres; but there are many from 100 to 1,000 acres, but few above the latter number. The tenants chiefly hold at will: when a lease is granted, it is generally only for 4 or 5 years, which is even a worse tenure than the other. Much of the backward state of agriculture in this county and Huntingdon may be traced to the want of properly framed leases of a reasonable length. Farm houses and offices generally inferior; cottages said to be, for the most part, "wretchedly bad." Average rent of land 16*s*. 6¼*d*. an acre. Minerals and manufactures unimportant. Principal rivers, Ouse, Cam or Granta, and Nene or Nen. The old and new Bedford rivers are immense artificial cuts for the drainage of the fens, but the old one is now nearly choaked up; the waters of the Ouse run, for a part of its course, principally in the latter. The town of Cambridge is the seat of one of the great English universities. The county is divided into 14 hundreds, exclusive of the Isle of Ely, the city of Ely, and the borough and university of Cambridge, and contains 167 parishes. Cambridgeshire returns seven members to parliament, viz. 3 for the county, 2 for the university, and 2 for the borough of Cambridge. Principal towns and population in 1831, Cambridge, 20,917; Ely (city) 6,189; Wisbeach, 8,177. Population of county in 1831, 143,955. Sum expended for the relief of the poor in 1836, 74,808*l*. Annual value of real property assessed in 1815, 705,372*l*.; profits of trade and professions in ditto, 239,687*l*.

4. *Norfolk*, a maritime county, is bounded on the north and north-east by the German Ocean; on the south and south-east by Suffolk; and on the west and north-west by the counties of Cambridge and Lincoln, and the great arm of the sea called the Wash. It contains 1,295,360 acres, of which nearly 1,200,000 are supposed to be arable, meadow, and pasture. Surface generally flat. There is not, in fact, a single hill, of a medium size, to be seen in the whole county; but in some places there are gentle swells and depressions. The soil varies from the richest marsh land, clay and loam, to the lightest sand; but sandy loam is the most prevalent. The marsh land lies principally in the western part of the county, contiguous to Lincolnshire and Cambridgeshire, forming part of the Great Level of the Fens (*antè*, p. 24.); but there is also a considerable extent of very rich marsh or fen land, extending from Yarmouth as far west as Brundall, and north to Mundsley, on the coast: within this district there are several shallow lakes. In the north-western angle of the county, the soil consists of a sandy loam; and it is here that the peculiar system of agriculture, known by the name of the "Norfolk husbandry," is chiefly practised. The country from Thetford north to Castle Acre, has a poor, very light, sandy soil, bare of vegetation, and occupied mostly by heaths, sheep-walks, and warrens. The soil of the rest, or middle part, of the county consists of various descriptions of loam, some clayey and wet, but the greater portion sandy, dry, and suitable for the turnip husbandry. There is in most parts of the county inexhaustible supplies of excellent marl. The climate is dry and early; but the easterly winds are prevalent and severe in the spring. Norfolk, which is naturally a poor county, has been more improved than any other district in the empire. Previously to the reign of George II., the largest portion of the north-west part of the county, which is at present the most improved, consisted of wastes, sheep-walks, and warrens of very little value. These were converted into highly productive arable land by inclosing, marling, and the aid of the turnip husbandry. Lord Viscount Townshend did more to

promote these improvements, and in particular to introduce the turnip culture, the corner stone of the Norfolk system, than any other individual. The leading improvements, in more modern times, have principally consisted in the adoption of the drill husbandry, the better rotation of crops, and in the better selection and management of sheep and cattle. It is admitted, on all hands, that this county was formerly the best cultivated in England; but Mr. Loudon is inclined to think that, in this respect, it is at present inferior to Northumberland. Messrs. Kennedy and Grainger are not, however, of this opinion. "Some parts of it," say they, "may not be so highly cultivated; but, taken as a whole, Norfolk undoubtedly excels every other county in England, both in the neatness and the condition of the soil."—(*Tenancy of Land*, vol. i. p. 288.) Barley is the principal corn crop. The usual rotation is, 1st, turnips; 2d, barley; 3d clover, or clover and rye-grass; and 4th, wheat: the seeds, in general, do not remain longer down than a year. Some farmers, particularly in the marsh land on the east coast, take a crop of pease or barley after the wheat; but it is a bad system, and is not followed by any good farmer in other parts of the county. Turnips form the basis of the Norfolk husbandry; and, in conjunction with marl, may be said "to have made the county." Tenants are in general so restricted that they cannot injure the land by over cropping. In other counties the principle of not taking two white crops in succession is approved, but here it is rigorously and systematically followed. On some estates, no oats are allowed to be sown, but only barley, the latter being supposed to be less injurious to the land. Norfolk is, indeed, by far the greatest barley county in the empire. Ploughing wholly executed by ploughs drawn by 2 horses or 2 oxen. Threshing-machines in pretty general use. The grazing husbandry of Norfolk is very inferior to the arable. Mr. Young says, that meadows and pastures are nowhere worse managed (*Survey of Norfolk*, p. 370.); but the management has been somewhat improved since he wrote. The Galloway breed of cattle has been naturalised in Norfolk, and is now the prevailing breed there and in Suffolk. The Galloways have gained in size since they were naturalised; but they are not so well-proportioned, do not fatten so easily, nor is their meat so good as in their native province. Besides those raised at home, vast quantities of Scotch cattle are annually purchased at the great fairs in Norfolk, to be stall-fed, and otherwise fattened, for the markets of the metropolis, which derive a large part of their supplies of butchers' meat from this and Suffolk. The native sheep of Norfolk are hardy, active, small, horned, with a black nose and feet, their fleeces weighing about 2 lbs., and their mutton much esteemed. Mr. Kent and Mr. Marshall suppose them to be better suited than any other breed for the county. But they are now nearly superseded, partly by the South Downs, and partly by Lincolns and Leicesters. At present the stock of sheep is supposed to amount to 720,000, and the total annual produce of wool to be about 14,000 packs. Vas tquantities of excellent turkeys are reared in Norfolk and Suffolk; and, besides those sent by other conveyances at Christmas, all the stage-coaches from these counties to London, excepting the mail, are freighted with turkeys, sometimes to the total exclusion of passengers! Pheasants and partridges are also very abundant: as are rabbits on the sandy grounds north of Thetford. Geese are still raised on some of the fens. Estates of all sizes from 30,000*l.* a-year downwards. Farms mostly large. "Great farms have been the soul of Norfolk culture: split them into tenures of 100*l.* a year, you will find nothing but beggars and weeds in the whole county. No small farmers could effect such great things as have been done in Norfolk. Inclosing, marling, and keeping a stock of sheep large enough for folding, belong absolutely and exclusively to great farmers." — (*Young's Eastern Tour*, vol. ii. p. 161.) Leases for 21 years were formerly general; and Mr. Young justly considers the security inspired by such a tenure as having contributed powerfully to the progress of improvement. At present, however, the usual leases are 7 or 14 years; but the Earl of Leicester, one of the principal proprietors, and the greatest improver in the county, always grants leases of 21 years; and this conduct, which is as judicious as it is liberal, has promoted, in no ordinary degree, the superior order of his estate. Farm buildings generally good. Barns larger than any where else in the kingdom. Average rent of land, 14*s.* 4½*d.* an acre. The woollen manufacture, particularly the worsted branch, has been long extensively carried on in this county, especially at Norwich. Various descriptions of silk goods, such as silk and woollen shawls, poplins, satins, crapes, &c., are also manufactured here. We suspect, however, that these branches are rather on the wane, in consequence of the competition of Bradford, Paisley, &c., which enjoy the important advantage of comparatively cheap coal. Principal rivers, Great Ouse, Nen, Little Ouse, Waveney, Yare, Wensume, and Bure. A water communication, admitting vessels drawing 10 feet, has recently been opened between Norwich and Lowestoff, on the coast of Suffolk. It consists partly of artificial cuts, but lies principally in the channel of the river Yare, which has been deepened and improved. Norfolk contains 33 hundreds, and no fewer than 731 parishes. It returns 12 members to parliament: viz., 4 for the county, 2 for the city of Norwich, and 2 each for the boroughs of King's Lynn, Thetford, and Yarmouth. Principal towns and population in 1831, Norwich (city) 61,110; Yarmouth, 21,115; King's Lynn, 13,370. Population of county in 1832, 390,054. Sum expended for the relief of the poor in 1836, 230,762*l.* Annual value of real property in 1815, 1,516,651*l.*; profits of trade and professions in ditto, 523,011*l.*

5. *Suffolk*, a maritime county, is bounded on the north by Norfolk; on the east, by the German Ocean; on the south, by Essex; and, on the west, by Cambridgeshire. It contains 969,600 acres, of which 820,000 are supposed to be arable, meadow, and pasture. Surface generally flat. Soil various: that of the middle and most extensive districts consists principally of a strong loam on a clay-marl bottom. The district bounded by the rivers Stour, Orwell, and Brett, south from Burstall, is a very rich loam, of extraordinary fertility. The maritime district, lying along the east coast, consists of sandy loam and sand, which, in some places, is covered with heath. The soil in the north-western parts is comparatively poor, consisting partly of

sand and partly of peat. On the whole, Suffolk is not inferior, in respect of natural fertility, to any county in the kingdom. The climate is dry; but frosts are severe, and in spring the north-east winds are sharp and prevalent. Tillage husbandry is prosecuted in Suffolk with great skill, spirit, and success. Ploughing, in every part of the county, is performed as in Scotland, by a pair of horses driven by the ploughman, and is extremely well executed. Fallowing is uniformly practised on the heavy lands. These, also, are particularly adapted for the growth of beans, which, as well as peas, are extensively cultivated. Turnips not so extensively grown as in Norfolk, being principally raised on the borders of Cambridgeshire. On clover leys, wheat is very generally planted by the dibble; but, where the land will admit, all sorts of grain, as well as turnips, are drilled. Arthur Young ascribes a great part of the improvement of Suffolk to the avoiding of spring ploughing. Most of the land in beans, peas, tares, &c., is now drilled without any ploughing, being merely scarified and scuffled so as to be rendered fine enough for the drill to work. The usual rotation in the turnip land is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat: on the heavy lands, 1st, fallow; 2d, wheat; 3d, seeds or beans; 4th, wheat: when the 3d is seeds, beans or oats come in 5th. Hemp has been cultivated for a very long period, and is reckoned of the finest quality. Carrots are a good deal grown; and hops are raised in the vicinity of Stowmarket. Suffolk is famous for its breeds of horses, cattle, and hogs. The horses are called *punches;* and are, as the term implies, short and compact, being well fitted for regular farm work. The cattle have sprung from the Galloways, many of which are fattened in the county. Like their progenitors they are polled, and rather small sized. At present the favourite colours are red, red and white, brindled, and a yellowish cream colour. Dun colour is now generally regarded as a mark of inferiority. They are better suited than the Galloways for the dairy, being excellent milkers. The produce of butter is not, however, supposed to be in proportion to the milk, though it is also very considerable. Arthur Young supposed that about 40,000 firkins of butter were annually sent from Suffolk to London (*Survey*, 2d ed. p. 204.); and, as the management of cows is now better understood, and more attended to, the quantity may, at present, be increased to 50,000 or 55,000 firkins. Arthur Young estimated the stock of sheep in the county at 240,000; but, according to Messrs. Luccock and Hubbard, it amounts to 497,000, producing annually 8,800 packs of wool. Ipswich sheep fair is one of the most extensive in the kingdom. Warrens were formerly numerous in the sandy district, but they are now much diminished. Property much divided; a good deal in the hands of respectable yeomen, who cultivate their own estates. Farms generally large, but many small. They are usually let on lease for 7 or 14 years. Tenants mostly restrained from exceeding 3 corn crops to a fallow; but, in other respects, they are left pretty much at liberty. Farm buildings indifferent. Cottages generally bad. Average rent of land, 14*s*. 3¾*d*. an acre. Minerals of no importance. This county was formerly celebrated for its manufactures, particularly those of wool; but they are now much decayed. Mixed silk and worsted stuffs are still, however, manufactured at Sudbury, Gainsford, and other places. Gun flints are made in large quantities at Brandon. There is a considerable manufacture of stays at Ipswich. Suffolk is well watered, being intersected by the rivers Orwell, Deben, Ald, Blythe, and Lark. It is separated from Essex by the Stour. Suffolk is divided into 21 hundreds and 510 parishes. It returns 11 members to parliament: viz. 4 for the county; 2 each for the boroughs of Bury St. Edmunds, Ipswich, and Sudbury; and 1 for the borough of Eye and the contiguous parishes. Principal towns and population, in 1831, Ipswich, 20,454; Bury St. Edmunds, 11,436; Sudbury, 4,677. Population of county, in 1831, 296,304. Many houses of industry have been erected for the support of the poor; but they seem to have wholly failed in their object, there being few counties in England in which the poor are so numerous or the rates so heavy. Sum expended for the relief of the poor in 1836, 187,896*l.* Annual value of real property, in 1815, 1,151,305*l.* Profits of trade and professions, in ditto, 453,485*l.*

6. *Essex*, a maritime county, is bounded on the north by the counties of Suffolk and Cambridge; on the east by the German Ocean; on the south by the Thames, which separates it from Kent; and on the west by Middlesex and Herts. It contains 981,120 acres, of which 900,000 are arable, meadow, and pasture. The face of the country is generally flat; and, though not destitute of hills or eminences, they nowhere rise to any considerable elevation. Soil almost everywhere a loam, and more generally heavy than light. In the north-west corner of the county, near Saffron Walden, there is a small tract of chalk land; and along the Thames and the sea there is a considerable extent of very rich marsh land. The remains of the ancient forests of Epping and Hainault are situated in the south-western corner of the county. The remaining unenclosed woods and wastes in them both amount to from 10,000 to 12,000 acres. East winds in spring are severe. In the low grounds, along the sea, fogs, particularly in autumn, are very prevalent; and agues prevail, not only in the marshes, but to a very considerable extent farther inland. Tillage husbandry is in a much more forward state than in many other counties. Wheat and barley the principal corn crops. In many parts the soil is not suitable for turnips; but they are very generally raised on the soils adapted to their culture. On light loams the usual rotation is, 1st, turnips; 2d, barley or oats; 3d, seeds; 4th, wheat; and, 5th, tares for feed; after which, they make a clean fallow for wheat or barley again, and, if a crop of peas or beans be taken, instead of sowing tares for feed, a slight dressing of dung is generally laid on the clover ley for wheat: on the stiff heavy loams, where turnips cannot be grown, the usual rotation is, 1st, fallow; 2d, wheat; 3d, seeds; 4th, oats; or, perhaps, wheat again. But there are thousands of acres in Essex that are fallowed alternately, year after year, half the arable land being under a dead summer fallow! It is believed, however, that this system would be materially improved by the occasional substitution of beans for fallows, and by other modifica-

tions.* The quality of Essex wheat is very superior. Mr. Vancouver estimated the produce per acre, of the lands under wheat in the county, at 24½ bushels. Mr. Young's estimate was 25 bushels; and we have heard good judges affirm that the latter is now under the mark. According to Mr. Howlett, Essex sends annually to the metropolis 250,000 quarters of wheat and 150,000 quarters of malt; but this estimate was formed many years ago, and the exports of wheat have increased considerably in the interval.—(*Young's Survey*, vol. i. p. 389.) Potatoes, owing in some degree, perhaps, to the vicinity of London, are more generally cultivated in this than in any other southern county. Hops in a few places; coriander and carraway, mustard, saffron (in the neighbourhood of Saffron Walden), and some other articles of inferior importance, are raised in this county. Essex has no particular breed of cattle. The suckling of calves, the dairy and grazing businesses, are all carried on to a considerable extent. The suckling farmers procure calves chiefly from the London and Suffolk dairies, and some from the Essex dairies. They are bought in at from 10 to 14 days old; and, being fattened for about three months, are slaughtered for the supply of the London markets. The principal dairy farms are at, or in the neighbourhood of, Epping, so famous for its butter. The grazing business is chiefly confined to the marsh lands; the principal stock fed on them being Welsh and Scotch runts. Lincolns, Leicesters, Southdowns, and most other breeds of sheep, are met with; but the Southdown is the most prevalent. The total stock is estimated at about 520,000, and the annual produce of wool at 8,650 packs. A good many hogs are kept. The Berkshire is the favourite breed in the southern parts; but in the northern there is every variety of mixture. Mr. Young says, that Lord Western's breed of hogs is by far the finest he saw in Essex: they are not, however, peculiar to his lordship's farm, but are pretty general in the county, though little known elsewhere. — (*Young's Survey*, vol. ii. p. 341.) Suffolk horses are favourites in Essex. Except upon the very heavy land, more than 2 horses are rarely seen in a plough. Property is very differently divided, there being estates of all sizes, from 1*l.* and 5*l.* up to 25,000*l.* a year; but there are few counties in which there are so many small and moderate sized farms in the occupation of their owners. Some of the hired farms in this county are amongst the largest in the empire. Even so early as 1767, Mr. Young found some of above 1,000*l.*, 1,500*l.*, and even 2,000*l.* a year of rent. Perhaps, however, the number of the very large farms has diminished, and they are now met with only in the maritime districts. But, taking the county at an average, the size of farms is by no means great. At an average, it may vary from 150 to 200 acres. Here, as in every other part of England, the best management, best stock, and the most improved and efficient implements, are uniformly met with on the larger farms. Leases less frequent now than formerly: those granted are for 7 and 14 years: some hold under running leases, renewable every 7 years. Farm buildings mostly good and commodious. Mr. Young (*Survey*, vol. i. p. 72.) estimated the average rent of the county, in 1807, at 20*s*. an acre; but it was ascertained by the property tax commissioners, in 1810, to be only 18*s*. 5¼*d*. an acre; and this is, probably, about its present amount. Minerals of little importance. At Purfleet, on the Thames, there are very extensive lime and chalk quarries; but the greater part of the chalk, used extensively by the Essex farmers, is brought from Kent. Manufactures, particularly of baize, were formerly carried on upon a large scale at Colchester, Coggeshall, and other places; but they are now much decayed, and have not been replaced by new ones of any importance. Besides the Thames, the Lea, and the Stour, which bound Essex on the south, the west, and the north, it is intersected by the rivers Roding, Crouch, Chelmer, Blackwater, Colne, &c. These rivers, as well as the Stour, have all, with the exception of the Roding, spacious havens, and are navigable to a considerable distance. — (See *antè*, p. 51.) Some of the rivers of Essex, particularly the Crouch and the Blackwater, are famous both for the breeding and feeding of oysters. A great number of boats are employed in carrying lean or half-fed oysters, from Portsmouth and other places, to the beds or feeding grounds, and in conveying the oysters, when fattened, to London and other places. The annual produce of marketable oysters is supposed to amount to from 12,000 to 15,000 bushels. Essex is divided into 14 hundreds, 5 half hundreds, and a royal liberty; and into 406 parishes. It returns 10 members to parliament, viz., 4 for the county, and 2 each for the boroughs of Colchester, Harwich, and Maldon. Principal towns and population in 1831, — Colchester, 16,167; Chelmsford, 5,435; Maldon, 4,895; Harwich, 4,297. Population of county, in 1831, 317,233. Sum expended for the relief of the poor, in 1836, 185,395*l.* Annual value of real property, in 1815, 1,584,108*l.* Profits of trade and professions, in ditto, 603,935*l.*[*]

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* *Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 206.; *Young's Survey*, vol. i. pp. 201—213.

7. *Hertfordshire*, an inland county, is bounded on the north by Cambridgeshire; on the East by Essex, on the south by Middlesex, and on the west by Bucks and Bedford. Its northern and western frontier is very irregular, and a detached portion at Coleshill is surrounded entirely by Bucks. It contains 403,200 acres, of which about 350,000 are said to be arable, meadow, and pasture. This is a very pleasing county. One of the great chalk-hill ranges runs along its northern frontier: the rest of its surface is diversified with hills and valleys; and, as it possesses a great number of gentlemen's seats and thriving plantations, it has a rich and highly ornamented appearance. It contains, according to Arthur Young, about 148,000 acres of sandy and flinty loam, 90,000 acres of clay, 47,000 acres of chalk, and about 17,000 acres gravel.[†] The best of the loamy soils

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[*] Mr. Howlett, vicar of Dunmow, in Essex, well known by his excellent pamphlets on Population, the Poor, Tithes, &c., was employed by the Board of Agriculture to draw up a Survey of Essex. He made considerable progress in the undertaking, but unfortunately died before he had brought it to a close. Mr. Young embodied the fragments left by Mr. Howlett in his work on Essex, which, in consequence, is one of the best of the class to which it belongs.

[†] This can only be considered as a very rude approximation; Mr. Young having materially underrated the extent of the county.

is the sandy vale from Cheshunt to Hoddesdon. The clay soils lie principally on the eastern, but partly, also, on the western side of the county. The gravelly tract lies around Hatfield, North Mims, &c.: it is very poor and unproductive. Substratum generally chalk. By far the largest portion of the county is in tillage. Principal crops wheat and barley, the quality of both being reckoned particularly good. Indeed, many thousand quarters of wheat are annually sold in the London markets as the produce of Herts, though brought from other counties. Turnips have been long pretty extensively cultivated in this county; but not so skilfully or successfully as in some others. In point of agricultural management, Herts does not stand high, and would even seem to have retrograded. "The land is, in general, ploughed very shallow, and is, in many parts, extremely foul: it is now much more the practice to take three crops to a fallow than two. The rotation generally is, 1st, fallow; 2d, wheat; 3d, seeds; 4th, wheat; 5th, oats: or, 4th, beans; 5th, wheat. The sowing of the corn, in many parts, reflects but little credit on the seedsman." (*Kennedy and Grainger*, vol. i. p. 239.) Large quantities of hay are produced; and its quality is reckoned superior. In the south-western parts there are a good many apple and cherry orchards. Few cattle are raised or fed in Herts; it being found more profitable to employ the grass land in the production of hay. A good many sheep are, however, prepared for the butcher. The stock in the county is estimated at 277,000, and the produce of wool at 5,770 packs. Property much divided. Few large estates. Farms of various sizes, but not generally large. Leases, where granted, are usually for 7 or 14 years. Average rent of land, 16*s*. 11½*d*. an acre. The manufactures of Herts are not of much consequence. A good deal of straw plat is made in the vicinity of Berkhampstead, Stevenage, St. Albans, &c. Silk and cotton are spun and ribands made at Tring, Watford, St. Albans, &c. Paper of the best quality is manufactured on a large scale, and in the most approved manner, near Rickmansworth and Watford. The malting business is extensively prosecuted at Ware, Hitchen, and other towns. Except chalk, the minerals are of no importance. The river Lea runs through the middle of the county: and it is also watered by the Rib, Beane, Colne, Gad, &c. The Stort bounds it for a considerable distance on the east. The Grand Junction Canal passes through its western extremity by Rickmansworth, Berkhampstead, and Tring. Herts contains 8 hundreds and 135 parishes. It returns 7 members to parliament; viz. 3 for the county, and 2 each for the boroughs of Hertford and St. Albans. Principal towns and population, in 1831, — Hemel Hempstead, 6,037; Hertford, 5,247; Watford, 5,293. Population of county, in 1831, 143,341. Sum expended for the relief of the poor, in 1836, 59,369*l*. Annual value of real property, in 1815, 583,657*l*. Profits of trade and professions, in ditto, 262,989*l*.

8. ***Middlesex***, the metropolitan county, is bounded on the east by the Lea, which separates it from Essex; on the north by the county of Hertford; on the west by Bucks; and on the south by the Thames, which separates it from Surrey and Kent. It is one of the smallest counties, containing only 180,480 acres; of which 150,000 are arable,

meadow, and pasture. Surface greatly diversified. The highest eminences are those of Hampstead, Highgate, and Harrow-on-the Hill. Soil various; and for the most part, at least in the vicinity of London, gravelly, and of little natural fertility, but enriched by the vast quantities of manure that have been laid on it. A tract of fine rich sandy loam stretches along the Thames from London to Isleworth; and there is a good deal of strong loam in the hundred of Thorn, between Pinner on the north and Northcote on the south. Some of the meadows along the Lea are exceedingly productive. Enfield Chase, in the north-east corner of the county, has been mostly enclosed and cultivated; but the greater part of Hounslow Heath, in its opposite or south-west angle, still continues in a state of nature. There are, also, some considerable commons in various parts of the county. Though variable, the climate is good. In London, in November and December, there are frequently very dense fogs. The temperature of the air in the city and its vicinity is a good deal affected by the immense number of fires; and, when dry, the atmosphere is always loaded with smoke and other impurities. But notwithstanding these defects, and the deleterious influence of cold, biting, north-east winds in March, April, and May, there are few, if any, large cities so healthy as London. It owes this distinction partly to its being mostly built on a dry soil, shelving to the river; partly to the excellence of its drainage, the liberal supply of water, and the general attention to cleanliness; and partly to the ebb and flow of the tide in the Thames, which scours its channel, and sweeps away every sort of filth and impurity, bringing with it constant supplies of fresh air as well as fresh water. Only a very small part of Middlesex is in tillage and garden ground; and, contrary to what might have been anticipated, there are few counties less advanced in agriculture. The old rotation used to be, fallow, wheat, and barley, or fallow, wheat, and beans sown broad-cast. But turnips and potatoes on the light, and drilled beans on the heavy soils, are now frequently substituted for fallows. The farming implements are generally bad; and it is said to be impossible to get any made on new or improved principles by the country artificers: the plough in common use is heavy, clumsy, and, in fact, barbarous; nor is it uncommon to see ploughs at work drawn by four, five, and six horses, with a ploughman and two drivers! The rich ground along the Thames, from Kensington to Isleworth, is principally occupied by market-gardeners and nurserymen, and contributes largely to the supply of the London markets with fruit and vegetables. By far the largest portion of the county is in grass; the management of which, particularly as respects the making of hay, is extremely well understood. Exclusive of the rich meadows along the Lea, and in other parts, about 70,000 acres are said to consist of upland meadows and pastures.—(*Middleton's Middlesex*, 2d edit. p. 284.) Breeding and fattening are, however, but little practised; the farmers having it in their power to turn their grass and hay to much better account, by selling them to the cow-feeders and stable-keepers of the metropolis. The consumption of hay and corn by horses is quite immense; and there are supposed to be at least 12,000 cows in the dairies of the metropolis and its vicinity. They are all short-horned. Few dairymen breed from their cows, which are fattened and sold as soon as their milk dries. The number of sheep bred and kept in the county is but inconsiderable. The feeding of house-lambs, as a luxury, in the winter months, used to be extensively practised by the Middlesex farmers. The lambs thus fed are the produce of Dorsetshire ewes, which are made to drop their young about Michaelmas. But the suckling system has been successfully tried in the counties at a greater distance from town, and has, in consequence, fallen off in its vicinity. Property, as is usual in the vicinity of all large towns, is very much subdivided. A few farms extend to from 500 to 600 acres, and a good many are about 200; but, at an average of the county, their size is not supposed to exceed 100 acres. Leases pretty general, mostly for 14 and 21 years. Old farm-houses and buildings principally of wood, and thatched; but those more recently erected are generally constructed of brick, and covered with tiles. Owing to the preponderance of meadow land, but few buildings are required on the farms. Average rent of land, 38*s.* 8½*d.* an acre. Minerals of no importance. In some places near London vast quantities of earth and clay have been dug up and converted into bricks; in most instances to the great advantage of the owners. Middlesex is extremely well watered. Its southern frontier, which is very irregular, is bounded throughout its whole extent, from the East India Docks to Staines, by the Thames. On the east it has the Lea, which is also navigable. On the west it is partly bounded and partly intersected by the Colne. The Brent rises near Barnet, and, flowing through the county, falls into the Thames at Brentford. The Grand Junction Canal enters Middlesex near Harefield, in its north-western angle, and, passing Uxbridge, unites with the Thames at Brentford. A branch from this canal has been carried to Paddington, on the western side of the metropolis; and has thence been continued, by the Regent's Canal, round the northern and eastern skirts of the city, to the Thames at Limehouse. Middlesex is divided into 6 hundreds, exclusive of the metropolitan divisions, and contains 197 parishes. It returns 14 members to parliament; viz., 2 for the county, 4 for the city of London, 2 for the city of Westminster, 2 for Marylebone district, 2 for Finsbury ditto, and 2 for the Tower Hamlets. Principal towns and population, in 1831, — London city, within and without the walls, 132,803; Westminster city, 202,891; Marylebone district, 240,294; Finsbury district, 226,086; Tower Hamlets, 367,864; Chelsea, 32,371. Population of county, in 1831, 1,144,531. Sum expended for the relief of the poor, in 1836, 408,027*l.* Annual value of real property, in 1815, 5,765,374*l.* Profits of trade and professions, in ditto, 15,255,246*l.*

London, for many ages the metropolis of England, and now of the British empire, stands principally on the north bank of the Thames, in this county. It is said by Tacitus to have been, in the days of Nero, *copiâ negotiatorum et commeatuum maximè celebre.* (*Annal.* lib. xiv. § 33.) From this remote epoch it has continued to be a place of great trade, magnitude, and importance. Its increase, in modern times, has been quite astonishing. We believe it is now the most populous, as it certainly is the richest and most commercial, city that ever existed. No situation could be more happily chosen. Though 45 miles from the sea, London enjoys, owing to its position on the Thames, all the advantages of an excellent sea-port; vessels of 800 tons burden coming up the river almost to London Bridge. (See *antè*, p. 36.) Had it been built lower down, it would have been less healthy, and more exposed to hostile attacks; and, had it been higher up, it would have been deprived of the inestimable advantage of a deep-water harbour. An infinite number of trades and professions are carried on in London; and, owing to the ample field afforded for the display of superior skill and ingenuity, and the intense competition that exists in every department, its tradesmen and artificers are amongst the best and most expert of any in the world. With the exception, however, of that of silk, which is prosecuted to a considerable extent in Spitalfields, and hat-making, but few branches of industry, coming under the usual denomination of manufacture, are carried on in the city. Of the artizans, the coach-makers, harness-makers, watch-makers, cabinet-makers, cutlers, printers, engravers, jewellers, mathematical and optical instrument makers, &c., are believed peculiarly to excel in their respective departments. According to the classified account given in the Population Returns for 1831, it appears there were then in the county, of males of 20 years of age and upwards, 5,209 bakers, 3,106 blacksmiths, 4,864 bricklayers, 4,439 house painters, 4,069 butchers, 12,354 carpenters, 4,921 cabinet-makers, 2,558 clock and watch-makers, 2,016 coach-makers, 15,274 shoe-makers, and 13,783 tailors. The breweries and distilleries, in the metropolis and its vicinity, are of great extent and importance. Notwithstanding its vast size, the markets of London are copiously furnished, at reasonable prices, with every article of necessity, convenience, and luxury; the supply of the most perishable articles being adjusted to the demand with a regularity and precision that must, *à priori*, have appeared incredible. With the exception of butcher's meat, most part of the bulky articles made use of in London is conveyed to her markets either by internal navigation, or by the sea. Coal is brought almost wholly by the latter, from the north, a small portion only being derived from Staffordshire by canal. It is impossible, indeed, that London should ever have attained to any thing like her present size, but for her command of internal and external navigation; while, however, the first gives her an easy communication with most parts of England, the latter opens to her a ready access to all the great markets in every other part of the world; so that, should our manufactures continue to prosper, London may increase her colossal magnitude for centuries to come. On the 31st of December, 1835, there belonged to London 2,828 registered vessels, of the burden of 566,152 tons, manned by 32,392 seamen. The *nett* customs-duty collected at the port, in 1835, amounted to the amazing sum of 10,601,600*l.*! So vast an amount of shipping and commerce was never previously entered in any single city. London may be truly said to be *universi orbis terrarum emporium!* In one of Sir William Petty's Essays on Political Arithmetic, published in 1687, the population of London, including Westminster and Southwark, is estimated at 696,000.

But, according to Gregory King, their population, in 1696, did not exceed 530,000 [*]; and we have not the least doubt that this estimate is much nearer the mark than the former. During the first half of last century, the population of the metropolis was not sensibly increased; and the mortality was such that it required large bodies of immigrants from the country to keep its numbers at their old level. But after the peace of Paris, in 1763, it began to increase; and since 1780 it has advanced with extraordinary rapidity. This has, no doubt, been, in part, a consequence of the increasing wealth and prosperity of the country, but more, perhaps, of improvements peculiar to London, by which the condition of its inhabitants, and, in particular, their health, have been astonishingly improved. In 1796, the births, for the first time, exceeded the funerals: they have since continued to preserve a decided superiority; so that the population of the city might have been materially augmented, during the last half century, though she had not drawn a single recruit from the provinces. When the census was taken, in 1801, the metropolis was found to contain 864,845 souls: in 1811, its population had increased to 1,009,546; in 1821, to 1,225,694; and, in 1831, it reached the enormous amount of 1,471,941! Deptford, Greenwich, and Chelsea, can hardly, however, be considered apart from the metropolis, with which they are all but connected. In 1831, the population, included within a circle extending in every direction 8 miles from St. Paul's, amounted to 1,776,500! So great a number of human beings is not, we believe, accumulated on so small a space of ground anywhere else. The department of the Seine does not differ materially in extent from the circular space now mentioned; but, though it has Paris in its centre, its population, in 1832, was only 935,108. (See *Edinburgh Review*, No. 97. Art. 1.; *Preliminary Remarks to the Census of* 1831, p. 23.; *Annuaire du Bureau des Longitudes* for 1834, &c.)

South-eastern District.

1. *Surrey*, though inland, enjoys, in consequence of its being skirted by the Thames, most of the advantages of a maritime county. It has to the north Middlesex and a small part of Bucks, from both of which it is separated by the Thames; on the east it is bounded by Kent; on the south by Sussex; and on the east by Hampshire and Berks. It contains 485,120 acres, of which 400,000 are arable, meadow, and pasture. With the exception of the weald, the surface of Surrey consists of alternate hill and dale. Some of the hills rise to a pretty considerable height, affording highly diversified and beautiful prospects. This is particularly the case with St. Ann's Hill, St. George's Hill, Box Hill, Leith Hill, &c. The last commands a view of the entire weald of Kent, Sussex, and Surrey. The soil of this county comprises every variety, from the richest loam to the poorest moor. There are three portions, the soils of which are particularly well defined; viz., 1st, the weald, occupying all the southern part of the

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[*] See the Treatise by Gregory King, appended to the edition of *Chalmer's Comparative Estimate*, published in 1802, p. 411.

county from Crowhurst to Haslemere; 2d, the sandy loam district, lying between the weald and the downs; and, 3d, the downs, or chalk land, occupying the whole eastern side of the county from Croydon to Tilsey, but gradually decreasing as we advance westward, till, at Farnham, on the border of Hants, it is reduced to a narrow strip. To the north-east of the downs, between them and the Thames, there is a great variety of soil, partly consisting of strong, dark clay, partly of sandy loam, &c. In the north-western and south-western parts of the county, but especially the former, there are very extensive tracts of heath and moorish ground; and smaller tracts of the same kind are met with in various other places. In general, the Surrey heaths are of the very worst description. Bagshot Heath, including those that adjoin it, is by far the most extensive, and perhaps, also, the least valuable of the whole: it lies along the border of Berks. On the whole, the county may be said to be of an average degree of fertility. The climate is good; and, owing to the variety of surface, the abundance of wood, and its contiguity to the metropolis, it is one of the most desirable counties in England for a residence. A large proportion of Surrey is in tillage; but agriculture, speaking generally, is in a decidedly backward state. The usual rotation in the weald (for an account of the weald, see *antè*, p. 26.) is, 1st, fallow; 2d, wheat; 3d, seeds; 4th, oats; 5th, tares, which are fed-off, and the land brought in again for wheat; but frequently it is, 3d, oats; 4th, seeds; 5th, beans. In the northern part of the county, the rotation is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat; 5th, tares, rye, or other green crop. But two, or even more, white crops still not unfrequently follow in succession. On the rich, friable, calcareous loams, between Croydon and Epsom, 6 quarters of wheat an acre are not unfrequently reaped; and on the rich sandy loams, near Godalming, 5 quarters is no uncommon crop; but on the poorer soils, and in the weald, the produce seldom exceeds from 2½ to 3 quarters.—(*Stevenson's Survey*, p. 216.) The turnip culture was introduced into Surrey sooner than into any other English county; but even at present turnips are but seldom drilled: their management is but imperfectly understood, and tares are generally preferred by the Surrey farmers to any other species of green crop. Turnwrest ploughs are used in many quarters, but the swing plough is most common. It is drawn by 3, 4, or 5 heavy horses, yoked in line! Lime is extensively used as manure; and the application of salt for that purpose is daily becoming more general. Hops are raised in considerable quantities; and those grown in the neighbourhood of Farnham are preferred to most others. Peppermint, lavender, wormwood, chamomile, &c., are raised in the physic gardens about Mitcham; and a considerable extent of land at Battersea, and other places along the Thames, is appropriated to the production of asparagus and other vegetables, for the supply of the London market. There is no peculiar breed of cattle in Surrey; but the short-horns and the Sussex breed are the most prevalent. A considerable number of sheep are kept, principally on the down land. The total stock is estimated at 283,000, producing annually 4,120 packs of wool. Large numbers of hogs are fed: they consist principally of the Berkshire and Chinese varieties. The Dorking breed of fowls is in high estimation; they are large, handsome, perfectly white, and are distinguished by having 5 claws to each foot. There are no very large estates in Surrey. Farms of all sizes. The largest are on the down lands, and the smallest in the weald; but, at an average of the county, the size of farms is not supposed to exceed 170 acres. They are commonly held under leases for 7, 14, or 21 acres; but the vicious customs that prevail as to entry defeat the advantages that might otherwise have resulted from this tenure. Here, as in Kent and Sussex, an entering tenant has so many claims upon him for articles and work of comparatively little value, that, unless he be unusually rich, the greater part of his capital is swallowed up before he begins the business of his farm. This custom has contributed more, perhaps, than any thing else to retard improvement, to attach the farmers to ancient practices, and to keep agriculture in a depressed state, notwithstanding the advantages the Surrey farmers enjoy, through their proximity to the London market. — (*Kennedy and Grainger on the Letting of Land*, i. p. 321.) In the weald the farm houses are mean and ruinous, but they are better in other places. Cottages good; and frequently ornamented with vines and flowers. Average rent of land, 15*s.* 2¾*d.* an acre. There is a great deal of valuable timber and coppice-wood in Surrey, particularly in the weald. Large quantities of fuller's earth are dug up in various places in this county; and there are also excellent quarries of freestone and limestone. Except in so far as it is connected with the metropolis, Surrey has very few manufactures. Calico bleaching and printing are carried on at Wallington, Mitcham, and Murton; there are copper works in the parish of Wimbledon; and Godalming retains some portion of the stocking manufacture for which it was once so celebrated. Besides the Thames, it is watered by the Wey, the Mole, and the Wandle; and it is traversed by the Surrey and Croydon Canals. Turnpike roads good; but cross-roads, particularly in the weald, very indifferent. Surrey contains 13 hundreds, exclusive of the boroughs of Southwark and Lambeth, and the town of Guildford; and is divided into 142 parishes. It returns 11 members to parliament; viz., 4 for the county, 2 for the Lambeth district, 2 for the borough of Southwark, 2 for the borough of Guildford, and 1 for the borough of Reigate. Principal towns and population, in 1831, — Southwark, 134,117; Lambeth district, 160,613; Croydon, 12,447; Richmond, 7,243; Population of county, in 1831, 486,326. Sum expended for the relief of the poor, in 1836, 187,279*l.* Annual value of real property, in 1815, 1,589,702*l.* Profits of trade and professions, in ditto, 1,564,533*l.*

2. *Kent*, a maritime county, being the most south-easterly and nearest to the Continent of any in England, is bounded on the north by the Thames and the German Ocean; on the east and south-east by the latter and the Straits of Dover; on the south by Sussex; and on the west by Surrey. It contains 996,680 acres, of which above 900,000 are arable, meadow, and pasture. Aspect varied and beautiful. Along the banks of the Thames there is a considerable extent of marshy land. Indeed, the greater part of the land to the north of a line drawn from Gravesend, through Chatham, to the channel called

the East Swale, near Milton, including the Isles of Sheppey and Grain, is of this description; and there is, also, a good deal of marsh land on the banks of the Stour river, separating the Isle of Thanet from the rest of the county. Contiguous to the marshes, on the East Swale and the Stour, lies a tract of very fine, deep, rich, loamy land, stretching from Deal, by Canterbury and Feversham, to Hartlib. Immediately to the south of the western marshes, and of the tract now mentioned, a ridge of chalk-hills extends the whole length of the county from Dover, where the cliffs overhang the sea, in a north direction to Feversham, on the confines of Surrey. Nearly parallel to the ridge now mentioned, and at the distance, in most places, of about 8 miles, there is another ridge, called the lower or ragstone ridge. To the south of the latter is the district called the weald; and in the extreme south-eastern angle of the county is Romney marsh. The soil in these districts is exceedingly various. In the marshes it is mostly alluvial, deep, rich, and very fertile. On the chalky grounds, particularly on the sides of the hills, it consists principally of a loose, chalky mould, having, in some places, a small admixture of flints; and in others, of a poor, black, light mould and sand. The low grounds, between the two ridges of hills, consist mostly of dry, loamy soil, which is both fertile and easily wrought. The soil of the lower, or ragstone ridge, varies much; in some parts it is a rich loam, while in others it is clayey, sandy, and stony. The weald and Romney marsh have been elsewhere fully described.—(See *antè*, p. 26. and p. 30.) Generally speaking, the soil of the eastern division of the county is believed to be superior to that of the western division.

The Isle of Sheppey, alluded to above, lies eastward from the mouth of the Medway, being separated from the rest of the county by the navigable channel called the Swale. It is about 11 miles long, and 8 across, at the broadest part, having the naval station of Sheerness at its north-western extremity. The soil consists principally of a deep, strong, stiff clay; but in the marshes the clay is covered with a thin stratum of very rich vegetable mould. The southern, and larger portion of the island, is low and marshy; but, on its northern side, the cliffs are pretty high; and, being gradually undermined, portions of them are every now and then falling into the sea. Most part of this island, as well as the marsh land in general, is far from being healthy.

The Isle of Grain consists of a low, marshy tract, lying to the west of the embouchere of the Medway; but the shallow, narrow arm of the sea, by which it was formerly separated from the mainland, is now partly filled up, so that it is no longer an island.

We have elsewhere noticed some of the more prominent circumstances connected with the progressive geography of the Isle of Thanet (*antè*, p. 69.), occupying the north-eastern angle of the county. It contains about 3,500 acres of excellent marsh, and about 23,000 acres of dry arable land. The last rests entirely on a hard, dry, chalk subsoil, and is, for the most part, particularly in the district between Ramsgate and Monkton, loamy and very fertile. Thanet formerly belonged principally to religious houses, which were by far the best farmers of their age: it is mostly under the plough, and has always been famous for its superior culture. There are few districts, of the same extent, in which so much sea-weed is used for manure.— (*Boys' Survey of Kent*, pp. 4. 13.)

Kent, principally, no doubt, from its proximity to the Continent, was the most early civilised portion of Great Britain. Cæsar, speaking of the British tribes, says, *Ex his omnibus longe sunt humanissimi qui Cantium incolunt.* — (*De Bello Gallico*, lib. 5. § 14.) The same circumstances to which it owed its early superiority rendered it, for a lengthened period, the most important county in the kingdom; and, though it be now far surpassed by others in wealth and population, its situation, the variety of its soil and surface, the amenity of its climate, and its peculiar customs, preserve to it no small portion of its ancient celebrity. Nothing can exceed the variety and excellence of its raw products. It yields capital crops of all sorts of grain, but in particular of wheat, barley, peas, and beans. More hops are raised in it than in any other county; and it supplies a very large part of the cherries, filberts, plums, apples, &c. required for the supply of the London markets. The weald has been long celebrated for its oak timber; and Romney marsh for its cattle, sheep, and wool. There are, also, very large gardens for the culture of asparagus, cauliflower, &c. From Maidstone to Tonbridge, the orchards and gardens have a very beautiful appearance; and the training of the filbert trees, the crops of which are an object of much importance, is well worth attention. Poultry of every sort is large and fine; and the fish caught on its own shores, and the rivers and ponds within it, not only supply the tables of the rich in great plenty, but afford a cheap and constant support to the poor. The native Milton oysters are said to be superior to those taken in any other part of England. The several warrens supply the markets with rabbits. From the number of parks, there is great plenty of venison; which, in those of Eastwell, Knoll, and Cobham, is esteemed superior in flavour and goodness to all others. Game, likewise, is in great abundance throughout the whole county; viz., hares, pheasants, and partridges; the pheasants being esteemed larger, and finer flavoured, than in any other part of the kingdom. Deservedly, therefore, did Drayton, in his *Polyolbion*, celebrate its praises —

> "Oh! famous Kent, *quoth he*,
> What county has this isle that can compare with thee?
> Which hast within thyself as much as thou canst wish,
> Thy conies, ven'son, fruit, thy sorts of fowl and fish:
> And, what comports with strength, thy hay, and corn, and wood:
> Not any thing thou wants that any where is good."

Agriculture, particularly in East Kent, is in a very advanced state. Wheat and barley are raised in large quantities: the best samples of the former, brought to the London market, being the produce of the Isle of Sheppey. The culture of beans and peas is said to be better understood here than anywhere else in England: they are mostly put in by the drill plough; and corn on the light land is, also, mostly drilled. Except in the Isle of Thanet, turnips are grown, on all the lighter soils, to a considerable extent. The usual rotation is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat; 5th, peas: in West

Kent it generally is, 1st, fallow; 2d, wheat; 3d, oats; 4th, seeds or beans.* Various sorts of manure are made use of; among which may be specified fish and woollen rags. The effect of the former lasts but for a short time; but that of the rags is said to continue for several years. Chalk is burnt and used as manure within the county; and the chalk rubbish is frequently carried across the Thames to Essex, where it is applied with considerable success to cold, marshy lands. The hop plantations principally lie between Maidstone and Canterbury. In 1834, the entire plantations in the county occupied 21,402 acres; and the duty (*2d.* per lb.) produced 175,555*l.*; showing that the crop amounted to 21,066,600 lbs.; but hops are a very precarious article, and this was an unusually favourable year. The woollen rags are commonly applied to the hop plantations. Exclusive of the leading articles of produce, a number of inferior articles, as canary seed, radish seed, spinach seed, &c., are very extensively cultivated, principally in the Isle of Thanet, but partly, also, in other parts of East Kent. Enclosures generally small, except in the north-east part of the county beyond Canterbury, which is comparatively open. Kent can hardly be said to be either a grazing or a breeding county; but large numbers of cattle are, notwithstanding, fattened and kept for the dairy. In the weald the Sussex oxen are a good deal used for the plough and the road; but the dairy cattle are generally drawn from other counties, being principally Welsh mixed with Sussex, &c. The stock of sheep in Kent is very large. The Romney marsh sheep is peculiar to the county: it stands high on its legs, and is handsome; but is not so large as it looks: it fattens early, and produces long combing wool. The stock of marsh sheep is estimated at about 293,000; the stock in the rest of the county at about 520,000. The total produce of wool is supposed to exceed 18,000 packs. Property much divided. The yeomanry are here a superior class; and, besides their own estates, some of them occupy extensive hired farms. All lands in Kent, unless specially exempted by an act of the legislature, are held by the tenure of *gavelkind;* descending, in the event of the father dying intestate, not to the eldest son, but *to all the sons alike in equal portions;* and, if there be no sons, then they divide equally among the daughters. This is supposed to have been the common tenure in England before the Conquest; but, besides Kent, it now obtains only in a few places. Some estates have been *disgavelled*, or excepted by act of parliament from this tenure; and partition is now, in most instances, prevented by testament. But such lands as are not disgavelled, or are not disposed of by testament, are invariably divided as stated above. — (See *Hasted's Kent*, vol. i. pp. 311—321.) Size of farms various; many from 10 to 14 acres; few exceed 200 acres; though there are some from 600 to 1500 acres. In many parts the farmers hold at will; but the greater number have leases for 7 or 14 years. The practice as to the entry to farms, that prevails in this county, is the same that prevails in Surrey (which see); and, considering its vicious nature and powerful influence, it is surprising agriculture should be in so advanced a state. Hundreds of tenants have, however, been ruined, in consequence of the oppressive charges made upon them at entering having deprived them of capital sufficient to manage their farms, and to meet any unfavourable contingency.* Owing partly to the gambling spirit occasioned by the uncertainty of the hop harvest, partly to the prevalence of smuggling on the coast, caused by the exorbitant duties on foreign brandy and geneva, and partly to the maladministration of the poor-laws, the peasantry, in parts of Kent, have of late years been a good deal demoralised. But, with the exception of the first, the influence of which is the least sensible, the other causes of demoralisation will, most likely, soon be obviated; so that an important improvement may, in this respect, be fairly anticipated. Farm-houses and buildings generally indifferent, and most of them constructed of timber; but those that have been erected during the present century are mostly of brick, and are more commodious. Average rent of land, 17*s.* 5*d.* an acre. Besides the oak timber in the weald, there is a great deal of valuable timber, and of coppice-wood, in other parts of the county. Underwood is in great demand for hop-poles. Birch, of which there are large quantities, chiefly goes to the broom-makers of the metropolis. Labour mostly done by the job. Manufactures not very important; the principal being that of ship-building, carried on at Deptford, Woolwich, Chatham, and other places. Toys and turnery ware are made at Tonbridge; gunpowder at Dartford and Feversham; and paper at Maidstone and Dover. Iron ore is found all over the weald; and extensive iron works were formerly carried on in the parts of that district contiguous to Sussex. Principal rivers, Thames, Medway, Stour, Rothe, Darent, and Ravensbourn. A canal for barges unites Gravesend on the Thames with Chatham on the Medway, obviating a considerable length of navigation. The Grand Military Canal, constructed as a defensive work during the last war, runs along the northern boundary of Romney marsh. Kent is divided into the 2 nearly equal divisions of East Kent and West Kent, each district having its own court of sessions. It is also divided into 5 lathes, which are subdivided into 63 hundreds and 15 liberties: it contains 411 parishes. Kent returns 18 members to parliament; viz., 4 for the county, 2 each for the cities of Canterbury and Rochester; 2 each for the boroughs of Dover, Greenwich, Maidstone, and Sandwich; and 1 each for Chatham and Hythe. Principal towns and population, in 1831, — Greenwich, 20,712; Deptford, 19,705; Maidstone, 15,287; Chatham, 16,485; Canterbury, city, 15,314; Rochester, city, 9,891; Dover, 11,924; Sandwich, 3,136. Population of county, in 1831, 479,156. Sum expended for the relief of the poor, in 1836, 247,930*l.* Annual value of real property, in 1815, 1,687,443*l.* Profits of trade and professions, in ditto, 1,626,229*l.*

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* *Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 252.

3. *Sussex*, a maritime county, is bounded on the north and north-east by Surrey and Kent; on the south and south-east by the English Channel; and on the west by Hampshire. It contains 938,240 acres. Surface and soil very various. A ridge of chalk-hills, to which (though in strictness applicable only to a part) the term South Downs

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* See remarks on the letting of land in this work.

is usually applied, runs through the county from South Harting and Miland Chapel, on the confines of Hants, to Beachy Head, where it terminates in high precipitous cliffs. Their northern declivity is rather steep, but that on the southern side is gently sloping. The soil of the South Downs is generally a light hazelly mould, on a substratum of loose chalk. On the south side of this range, along the coast from Emsworth, gradually decreasing to near Brighton, there is a considerable extent of fine, rich, loamy land. To the north of the South Downs lies the extensive tract called the weald of Sussex, uniting on the east with the weald of Kent, and stretching as far west as Petworth. Some writers include the poor sandy districts between Horsham and Maresfield, and those in the north-east corner of the county, in the weald; while others, and we think with more propriety, exclude them. The soil of the weald is similar to that of the weald of Kent, being for the most part a stiff tenacious clay, with occasional sandy and gravelly patches intermixed. It is thickly covered with oak wood; and, when viewed from the South Downs, appears like an immense forest. — (For a full account of the Weald, see *antè*, p. 26.) In the eastern parts of the county, in what is called Pevensey Level, and near Winchelsea, there are considerable tracts of very fine, deep, marsh land. The Rev. Mr. Young, in his valuable *Survey of Sussex*, distributes the surface as follows: — down land, 68,000 acres; rich arable, 100,000; waste (chiefly sand), 110,000; arable and pasture in the weald, 425,000; woods in weald and elsewhere, 170,000; making in all 903,000 acres. The rest consisting of water, sands, buildings, &c. Climate mild, dry, and early. A large extent of Sussex is under the plough; but husbandry is in a backward condition; and Messrs. Kennedy and Grainger truly state, that no very material improvement need be expected till those pernicious habits, with respect to the letting and entry to farms, that prevail in this county, as well as in Kent and Surrey, be totally changed. — (*Tenancy of Land*, vol. i. p. 337.) The crops principally cultivated are wheat, oats, and barley; and on all the light lands turnips are extensively grown. The usual rotation on these is, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat; 5th, rape or other green crop. In the weald the usual rotation is, 1st, fallow; 2d, wheat; 3d, seeds; 4th, oats; or 3d, oats, 4th, seeds. Beans not much cultivated. Great quantities of hops are raised, particularly in the eastern parts of the county; there being, in 1834, 10,431 acres under this crop. Sussex is deservedly celebrated for its breeds of cattle and sheep, each being about the very best of its kind. The oxen are of a deep red colour, and have tapering turned-up horns; they fatten easily, produce excellent beef, and are not inferior to any other breed in field labour. The greater part of the tillage in the weald is performed by ox-teams. The native cattle do not, however, answer for the dairy. The peculiar breed of sheep belonging to the county is called the South Down, from its being found in the greatest perfection on the South Down chalk-hills. The breed is now widely diffused; but, owing to the extension of tillage on the downs, and the increase in the size of the animal and the weight of the fleece, neither the mutton nor the wool is supposed to be so good as formerly. The high prices obtained for corn during the latter years of the war, and the low prices of wool from 1825 to 1830, occasioned a considerable extension of tillage on the down lands. But the recent low price of corn, and great rise in the price of wool since 1830, have caused a reaction, and have made a good deal of the land be again restored to its most suitable purpose, that of pasturage. Generally, also, the sheep stock has been increasing, as compared with that of cattle, in every part of the county. The total stock of sheep is estimated by Messrs. Luccock and Hubbard at about 863,000, of which 316,000 are supposed to be depastured on the downs. The entire annual produce of wool is estimated at 10,800 packs. This estimate differs materially from that given by Mr. Young in his survey (p. 373.); but we incline to to think that it is tolerably accurate. The fact is, that the extension of cultivation, though it has deteriorated the quality, has, by increasing the turnip culture, materially increased the number as well as the size of the sheep. Sussex has been celebrated from the remotest period for the abundance and excellence of its timber; and in these respects it continues to be decidedly superior to every other county. Oak is the principal timber of the weald; but in other parts beech is most prevalent. To the abundance of wood is principally to be ascribed the circumstance of Sussex being formerly distinguished for the number of its *iron-works;* but, since pit-coal began to be generally employed in the smelting and refining of iron, these have been wholly abandoned, as well as those that were established in Kent. Property much divided. Average size of farms in the weald 100 acres; in the downs, from 1,200 to 2,000 acres. A great proportion of the farms held by tenants at will; and, owing to the absurd customs as to entry, a large part of the capital of the tenant is swallowed up in the useless payments he is compelled to make; so that much of the land is very insufficiently stocked. Offices invariably thatched and weather-boarded. Average rent of land, 11*s.* 8½*d.* an acre. Manufactures of little importance. Ironstone, fuller's earth, limestone, and sandstone are all met with. The rivers are of no great magnitude. The principal is the Arun. It communicates by a canal with Langport harbour on the west, and with the Wye and the Thames on the north. In the weald there are several ponds in which freshwater fish are fed for the London markets. Sussex is divided into 6 rapes, and these again into 65 hundreds, and contains 310 parishes. It returns 18 members to parliament; viz., 4 for the county; 2 for the city of Chichester; 2 each for the boroughs of Brighton, Lewes, Hastings, and Shoreham; and 1 each for Arundel, Horsham, Midhurst, and Rye and Winchelsea. Principal towns and population, in 1831, — Brighton, 41,994; Hastings, 10,097; Lewes, 8,592; Chichester city, 8,270; Horsham, 5,105. Population of county, in 1831, 272,328. Sum expended for the relief of the poor, in 1836, 161,589*l.* Annual value of real property, in 1815, 919,350*l.* Profits of trade and professions, in ditto, 372,059*l.*

Southern District.

1. *Berkshire*, an inland county, is bounded on the north by the counties of Oxford and Buckingham, from which, through its whole

extent, it is separated by the Thames; on the east by Surrey; on the south by Hants; and on the west by Wilts and a part of Gloucestershire. It contains 481,280 acres. This, which is one of the most beautiful counties in the empire, is naturally divided into four districts, viz: — *First*, the Forest district, comprising almost all the eastern part of the county, as far west as the river Loddon. It contains Windsor Forest, part of Bagshot Heath, and some other considerable tracts of waste land. Its surface and soil are various, but the latter is, for the most part, sandy, gravelly, and poor. *Second*, the Vale of the Kennet, stretching from near Wargrave on the east to Hungerford on the west. Gravelly soils predominate in this vale, but they differ widely in quality and fertility: a good deal of peat is found at different places along the banks of the river. *Third*, the chalk-hills, or downs, stretching across the county, from near Streatley on the east to Ashbury on the west. And, *fourth*, the Vale of the White Horse, lying to the north of the chalk-hills, and so called from the gigantic figure of a horse rudely sketched on one of these hills. The prevailing soil of the level parts of the vale is a strong, grey, calcareous loam, producing luxuriant crops of grass and corn; but, in some places, the soil is of inferior fertility. Dr. Beeke, one of the best statistical writers that this country has produced, supposes Berks to contain 464,500 acres, distributed as follows: —

	Acres.
Arable land, about - - - - - - -	255,000
Meadows, and dairy land in the vale, - - - - - -	72,000
Sheep-walks, chiefly unenclosed, on the chalk-hills - - -	25,000
Other dry pastures, parks, &c. - - - - - - -	25,000
Wastes, chiefly barren heaths, - - - - - - -	30,000
Wood, copses, &c. - - - - - - - -	30,000
Space occupied by buildings, courts, fences, roads, rivers, &c. - -	27,500
	*465,500

Agriculture is at rather a low ebb. Principal crops, oats and wheat. The land is usually held on leases for 7 and 14 years; but, as there is rarely any restriction on the tenants as to its cultivation, or the mode of cropping, the soil, unless where it happens to be occupied by its owners, is, generally speaking, very much out of condition. "*A tenant, down to the last year or two of his lease, drives the land as hard as he possibly can, and, in fact, leaves it entirely run out.*" — (*Kennedy and Grainger*, vol. i. p. 145.) The ordinary rotation on the turnip land is, 1st, turnips; 2d, barley or oats; 3d, seeds; 4th, wheat; and, 5th, oats: upon the heavy land the course is, 1st, fallow; 2d, wheat; 3d, beans; 4th, wheat or oats; and, if the 4th be wheat, then 5th, oats. The land, as the authorities now quoted observe, is, in most cases, "*tried to the utmost.*" Four or five horses are generally used in ploughing; and it is believed that, of the total number of 12,000 or 13,000 horses, supposed to be employed in the county for agricultural purposes, a third might be advantageously dispensed with. On the heavy soils beans are chiefly dibbled. Berks enjoys considerable celebrity as a dairying and grazing county. The cattle are now principally of the Holderness and Teeswater breeds; but Scotch and Welsh cattle are extensively grazed in the Forest district. The western part of the Vale of the White Horse, and particularly the parish of Buscot, contiguous to Gloucestershire, is celebrated for its dairies. It is there that the "pine-apple" cheese is principally made; but the greater part of the cheese made in the Berkshire dairies is of the description called double Gloucester. Dr. Mavor estimated the total number of cows kept in the dairying district at 5,000; and he states, that from 2,000 to 3,000 tons of cheese were annually sent to London from the wharf at Buscot; of which the quantity furnished by the Berkshire dairies was not less than 1,000 tons.—(*Survey*, p. 375.) At present, however, very little of the cheese of Berks, Gloucester, Wilts, and other western counties, is conveyed to London by water. The frequent interruptions in the navigation of the Thames, and the liability of the cheese to heat, having occasioned so much loss that it is now mostly all forwarded by waggon. The South Down breed of sheep, but much crossed, is at present the most generally diffused. The total stock of sheep is estimated at about 308,000, and the total annual produce of wool at 4,470 packs. The Berkshire breed of hogs is one of the very best in the empire. They are raised in great numbers, and are mostly made into bacon. About 4,000 are killed at Faringdon only, between Michaelmas and April. Large quantities of onions, asparagus, &c., raised at Reading and its vicinity for the London and Bath markets. Few large estates: property much divided; and a good deal in the occupation of yeomen. Farms middle-sized, rather small. Farm buildings and cottages of a medium quality. Average rent of land, 16*s.* 10*d.* an acre. Windsor Castle, the ancient, favourite, and only magnificent residence of the kings of England, stands on the eastern margin of this county. Manufactures and minerals of no importance. Exclusive of the Thames, by which it is bounded along its whole northern frontier, for about 100 miles, Berks is watered by the Kennet, the Loddon, the Ock, and other rivers; it is also traversed by the Kennet and Avon, and the Berks and Wilts canals; and it will be intersected by the great western railroad from London to Bath and Bristol. It contains 20 hundreds and 151 parishes. It returns 9 members to parliament; viz., 3 for the county, 2 each for the boroughs of Reading and Windsor, and 1 each for Abingdon and Wallingford. Principal towns and population, in 1831, Reading, 15,595; Windsor, 5,650; Abingdon, 5,259. Population of county, in 1831, 145,289. Sum expended for the relief of the poor, in 1836, 65,343*l.* Annual value of real property, in 1815, 719,890*l.* Profits of trade and professions, in ditto, 299,704*l.*

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* *Mavor's Survey of Berks*, p. 3.

2. *Wiltshire*, an inland county, is bounded on the north and north-west by the county of Gloucester; on the west by Somerset; on the south by Dorset and Hants; and on the south-east and north-east by the latter and Berks. It contains 874,880 acres, of which about 800,000 are arable, meadow, and pasture. It is divided by the rivers Kennet and Avon, and the canal by which they are united, into two grand divisions, popularly termed, from their situation, North and South Wiltshire. But it would be more naturally divided into a

north-west and south-east division, by a line drawn from Bishopston, on the Berkshire border to Devizes, and thence to Maiden Bradley, on the confines of Somersetshire. This would throw almost all the down lands into the south-east division. But, taking the divisions as we find them, the southern one consists, in great part, of Salisbury Plain, extending from Westbury and Warminster, on the west, across the county to Hampshire, and from Lavington, on the north, to near the city of Salisbury on the south. It consists principally of chalk downs, intermixed, however, with some fertile, well-watered, and beautiful valleys. Though called a plain, the surface, as in all chalk land, is undulating: the most level part lies round Stonehenge. There is a good deal of rich land in the southern division, between Trowbridge and Pewsey, and between the Willy and the Dorsetshire border, east, to Wilton and Salisbury. Marlborough Downs, which bear, in most respects, a close resemblance to Salisbury Plain, lie in the northern division of the county, between Marlborough and Swindon; but, with this exception, this division consists principally of rich vale land, considerably exceeding in extent and importance the cultivated grounds of the southern division. There are some large estates; but property is, notwithstanding, a good deal subdivided. Farms of all sizes, and generally let on lease, for 7, 14, and 21 years, with unobjectionable conditions as to entry. Farm-houses, in the southern division, were formerly built together, for the convenience of water; but the more modern ones are generally detached. Agriculture in Wiltshire is in an advanced state, and reflects great credit on the skill and enterprise of the farmers. The land under the plough is remarkably clean and in good order. It is believed, however, that tillage on the down lands has been too much extended. When once broken up, it is extremely difficult to get them again into good condition as pasture; while, unless corn fetches a pretty high price, they are most productive in the latter. Principal corn crops, wheat and barley; the latter being, however, confined, in a great measure, to the light chalky soils. Turnips, rape or cole seed, and potatoes, largely cultivated. Much of the rich land in the northern division is appropriated to the dairy husbandry, and the fattening of cattle. The cheese, which, excepting inferior butter made from the whey, is the only product of the dairies, was formerly sold as Gloucestershire cheese; but it is now well known, and much valued in London and elsewhere, by its own proper name of North Wiltshire cheese. Breed of cattle various: they are partly slaughtered in Bath, Salisbury, &c., but the greater number are sold to the London butchers. In despite, however, of the encroachments made by the plough on the downs, sheep continue to be regarded, in the greater part of the county, as the principal support of the farmer. They afford the chief article of manure used on the land; while the sale of the lambs and wool furnishes the principal means of paying the rent. In consequence, as it would seem, of this dependance, and of the high price of wool during the last 4 or 5 years, there have been fewer complaints among the Wiltshire farmers than amongst those of most southern counties. The sheep stock, consisting partly of the native horned breed, but in a far greater degree of South Downs, and crosses between the two, is estimated at about 700,000; of which about 584,000 are depastured on the downs, and the rest on the cultivated land: the fleeces of the former are supposed to weigh, at an average, 2¾ lbs., and those of the latter 4 lbs.; producing, together, about 8,650 packs of wool. The irrigation of water meadows is to be seen, in the greatest perfection, in South Wiltshire, and is practised on a large scale. Many hogs are kept; and Wiltshire bacon is highly esteemed. In the vicinity of some of the towns of South Wiltshire a good deal of garden husbandry is carried on. Average rent of land, 18*s*. 6¼*d*. an acre. Stonehenge stands, in rude magnificence, in the middle of Salisbury Plain. It is a collection of vast stones, disposed endwise, in circles, some of them being joined by immense blocks, stretching from the top of one to that of another. The manufactures of Wiltshire are considerable: they consist principally of various descriptions of superfine woollen goods, made at Bradford, Trowbridge, Westbury, &c.: thicksets and other sorts of cotton goods are also prepared, though in small quantities. Wilton has been long celebrated for a carpet manufactory, established by one of the earls of Pembroke; but this, though it has latterly increased, is not so considerable as formerly. Some articles of a superior description of cutlery are produced at Salisbury; but, speaking generally, manufactures of all sorts are here, as in the other southern counties, on the decline. Principal rivers, Thames, Upper and Lower Avon, and Kennet. Exclusive of some local jurisdictions, Wilts contains 28 hundreds and 300 parishes. It returns 18 members to parliament; viz., 4 for the county; 2 for the city of Salisbury; 2 each for the boroughs of Chippenham, Cricklade, Devizes, and Marlborough; and 1 each for Calne, Malmesbury, Westbury, and Wilton. Principal towns and population, in 1831, — Trowbridge, 10,863; Salisbury city, 9,876; Chippenham, 5,270; Calne, 4,876. Population of county, in 1831, 239,181. Sum expended for the relief of the poor, in 1836, 133,472*l*. Annual value of real property, in 1815, 1,215,619*l*. Profits of trade and professions, in ditto, 376,071*l*.

3. *Hampshire*, *Southampton*, or *Hants*, a maritime county, including the Isle of Wight, is bounded on the north by Berks; on the east by Surrey and Sussex; on the west by Wilts and Dorset; and on the south by the English Channel. It contains 1,040,000 acres, of which the Isle of Wight contains about a twelfth part; and, including the island, 900,000 acres are supposed to be arable, meadow, and pasture. This county is reckoned one of the most agreeable in England. Its surface is varied with gently rising hills and fruitful vales, while its climate is peculiarly mild and genial. Soil various, but the greater portion chalky. The northern districts, towards Berkshire, are, in parts, hilly; but between Basingstoke and Silchester there is some of the finest wheat and bean land in the county. A broad zone of chalky hills, or downs, intersected by numerous valleys, extends across the county from the borders of Salisbury plain, on the west, to Dockingfield, Petersfield, and Blendworth, on the borders of Surrey and Sussex. The south-western district, or the country lying between Southampton Water and Dorsetshire, is principally occupied by the New Forest, and by extensive heaths. To the north of Portsmouth

harbour there is a considerable tract of forest and down land. But in the southern and middle parts of the county, and particularly in the vales watered by the Anton, the Itchen, and other rivers, there are large tracts of very good land, and some of the finest water meadows in England. Marsh land is found at different places on the coast, particularly on the west side of Southampton Water, near Fawley, but not to any great extent. Principal crops, wheat, barley, oats, beans, and a few peas. Turnips extensively cultivated, particularly on the light calcareous soils. Saintfoin, also, is grown to a greater extent on the chalky soils of Hampshire than, perhaps, in any other part of England. But arable husbandry, though much improved during the last 20 or 30 years, has not attained the perfection that might have been expected. It is usual to prohibit a tenant from taking two *wheat* crops in succession; but, two white crops not being commonly objected to, oats frequently follow wheat; so that the land, in many places, is impoverished and worn out. But this pernicious practice is on the wane. — (*Kennedy and Grainger*, vol. i. p. 242.) The old Hampshire plough, usually drawn by four large heavy horses, is a bulky, clumsy, implement; but ploughs of an improved construction, and made wholly of iron, are now in general use. The patent Hampshire waggon is formed by uniting two carts, and bolting them firmly together. There are some considerable hop plantations in the parishes eastward of Alton, and bordering on Surrey. The cattle consist of various breeds; but along the coast, and in the Isle of Wight, the Alderney or smaller breed of Norman cattle predominates: in other parts of the county Devons, or a cross between them and the Alderney, are most common. The dairy is not much attended to; and but little more butter is made than is required for the consumption of the county. The sheep consist of various breeds. In the forest lands, the heath sheep, and the old Wilts breed, were formerly the most prevalent; but they have since been much crossed with other breeds, and, in some degree, superseded by the South Downs. The stock of sheep is very large; being estimated at above 516,000 in the mainland, and above 60,000 in the Isle of Wight. The annual produce of wool is estimated at above 7,450 packs. The sheep fair, held at Weyhill, near Andover, in this county, is the best attended, and most important, of any in England. A great many small hardy horses are bred in the forest lands and on the heaths. Hants is famous for its bacon: its superiority does not, however, depend on the excellence of the native breed of hogs, these being coarse, raw-boned, and long-sided. The pure native breed is now, however, seldom met with; the prevailing breed being that of Berkshire, or a cross between it and the native breed, or the Chinese, or other variety. Estates mostly large: only a small part of the county belongs to, or is cultivated by, yeomen. Farms of all sizes: in the central parts of the county they are large, many comprising 400 and 500 acres, but in the other parts they are a good deal smaller. Until lately they were mostly let on lease; the pernicious practice of tenancy at will is, however, gaining ground. Farm-houses generally good. Many of the farm-buildings are of timber. Average rent of land, 11*s.* 5*d.* an acre. The New Forest contains, at present, about 92,000 acres, but it was formerly much larger. It occupies the whole country between Southampton Water on the east, the British Channel on the south, and the Avon on the west. William the Conqueror is generally believed to have afforested this immense tract, destroying, for that purpose, several towns, and many villages and churches. But it appears to be sufficiently established that there is but little foundation for these statements; that the greater part of the tract referred to had been a forest previously to the conquest; and that the injury done to the inhabitants by the proceedings of the Conqueror was comparatively trifling.* Only about 64,000 acres of forest land are now the property of the crown; the rest of the land, within the modern limits of the Forest, having been assigned to individuals. Oak and beech are the prevailing species of timber; but there are, in the forest, large tracts of heath. Besides the New Forest, there are, in this county, the remains of Bere Alice, Holt, Woburn, and other forests; and there are extensive bush woods on all the chalk lands. A great deal of honey is collected in different parts of Hampshire; but that made in the forest is most esteemed. If we except the building of ships at Portsmouth, and the various works connected with their construction and outfit, the manufactures of Hants are of no great consequence. Shalloons and serges were formerly made at Andover, Romsey, and other places, but the business is now much declined. There are silk mills at Overton, and straw bonnets are made in various parts of the county. The malting business is carried on upon a large scale. Minerals of little importance. Principal rivers, the Avon, which runs through the extreme south-western part of the county, the Anton, and the Itchen. The Anton rises in the northern parts of the county, near Overton, and, passing through Whitchurch, Stockbridge, and Romsey, falls into the north-western extremity of Southampton Water. A lateral canal accompanies it from its embouchure to Stockbridge and Andover. The Itchen rises in the middle parts of the county; and, passing through Winchester, falls into Southampton Water at Southampton. It has been rendered navigable as far as Winchester. The noble harbour of Portsmouth, and the road of Spithead, lie in the sound, which divides the mainland from the Isle of Wight.—(See *ante*, p. 57.) Hants, including the Isle of Wight, is divided into 39 hundreds, and contains 298 parishes. Principal towns and population, in 1831,—Portsmouth and Portsea, 50,389; Southampton, 19,324; Winchester city, 9,212; Lymington, 5,472. Population of county, in 1831, 314,313. Amount of sums expended on the relief of the poor, in 1836, 141,934*l.* Annual value of real property, in 1815, 1,240,547*l.* Profits of trade and professions, in ditto, 923,714*l.*

The *Isle of Wight* (the *Vectis* of the Romans) lies opposite to the Hampshire coast, being separated from it by the road of Spithead on the east, and by the Solent, or West Channel, on the west. From the southern part of the mainland, below Gosport, across the channel to Bursted, the distance is about 3 miles; but from Hurst Castle, across to the Isle, it is little more than a mile. The figure of the island is rhomboidal, having its sides parallel to the opposite shores of the mainland. From its eastern to its western angle, the distance is about 22 miles, and, from the northern to the southern, about 13. It contains 86,810 acres. The face of the country is beautifully diversified with hills, dales, towns, villages, and gentlemen's seats. A range of chalk-hills extends lengthwise across the island, affording excellent pasture for sheep, and some very commanding views. The cliffs on the south coast are bold and precipitous; and, being undermined by the sea, portions of them occasionally fall into it. The cliffs called the Needles, on the western angle, are lofty, detached, almost perpendicular, and strikingly picturesque.—(See *ante*, p. 56.) One of the tallest of these cliffs, being undermined by the action of the waves, was overthrown and totally disappeared in 1782. Climate extremely mild, and, perhaps, the most salubrious in England. Soil loamy, and mostly very fertile, being well adapted for all sorts of agricultural purposes. The husbandry is similar to that on the good soils of the mainland; and the island has a very large quantity of agricultural produce to dispose of after supplying its own inhabitants. It is divided into two nearly equal parts by the river Medina. Large quantities of fine sand are shipped from Freshwater Bay, for the glass and china manufactures in different parts of the country; but it has no other minerals of any importance. Population of the island, in 1831, 35,431.

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* *Beauties of England and Wales:* Hampshire, p. 158.

4. *Dorsetshire*, a maritime county, is bounded on the north by the counties of Wilts and Somerset; on the west by Devonshire; on the east by Hants; and on the south by the British Channel. It contains 643,840 acres, of which above 570,000 are arable, meadow, and pasture. Face of the country pleasantly diversified. Climate dry and salubrious, but the harvest not so early as in other districts not so far south. Mr. Stevenson, in his Survey of this county, estimates its surface at about 504,000 acres, of which he supposes 161,000 consist of chalk soil; 85,000 sand; 38,000 loam; 60,000 gravel; 30,000 stonebrash; 117,000 clay; and 13,000 miscellaneous. Dorsetshire has been sometimes termed the garden of England; but, though the vale of Blackmoor, traversed by the Stour, containing about 170,000 acres, and some other districts in the west part of the county and along the coast, be eminently fertile, it does not seem to have any very peculiar title to this epithet. It contains a large extent of chalky downs: between Blandford and Hampshire there is a considerable extent of forest land; and round Poole Harbour there are many thousand acres of barren, heathy, moors. Property in large estates. Farms of various sizes, but the greater number large. Leases less common now than formerly. Average rent of land, 15*s.* 2¼*d.* an acre. Arable husbandry materially improved by the adoption of a better rotation of crops; the substitution of turnips for fallows on the light soils, &c. Hemp and flax a good deal grown, but less than formerly. Water meadows extensive, and their management well understood. The greater part of the county in grass; being devoted either to the feeding of sheep, or to the dairy system. Sheep short woolled, and reckoned superior to most others, both for fattening their lambs,

and bringing them early forward. Mr. Parkinson characterised "the Dorset ewe as the best horned ewe in the kingdom, those of Somerset excepted; and they are so near alike that few people know the difference." (*Stevenson's Survey*, p. 393.) The stock of sheep in the county is estimated at about 632,000, the average weight of the fleece at 3¾lbs., and the total produce of wool at about 9,900 packs. Sheep-folding extensively practised. Cattle of no peculiar breed. The dairies are many of them very large. Butter the principal product; the cheese, being made only from skimmed milk, is generally consumed within the county. Dairies, for the most part, let by the farmers at so much a cow; and several of the lessees are known to have made considerable fortunes. Free-stone of a very superior quality is furnished by the quarries in the Isle of Portland, large quantities being shipped from it for the metropolis and other places. Purbeck furnishes the potteries of Staffordshire with supplies of the clay used in the manufacture of the finer sorts of earthenware. There are considerable manufactures of flax and hemp at Bridport and Beaminster. Shirt buttons are made in large quantities at Shaftesbury and Blandford; white baize at Sturminster; silk is spun at Sherborne; and there is a considerable manufacture of baskets and other small articles. Principal rivers, Stour and Frome. Dorset contains 34 hundreds, distributed into 5 divisions and 271 parishes. It returns 14 members to parliament; viz., 3 for the county; 2 for each of the boroughs of Bridport, Dorchester, Poole, and Weymouth; and 1 for Shaftesbury and Wareham. Principal towns and population, in 1831, — Poole, 8,216; Shaftesbury and the adjoining parishes, 8,698; Weymouth and Melcombe Regis, 7,665. Population of county, in 1831, 159,252. Sum expended for the relief of the poor, in 1836, 68,019*l.* Annual value of real property in 1815, 726,264*l.* Profits of trade and professions, in ditto, 241,634*l.*

South-western District.

1. *Somersetshire*, a maritime county, is bounded on the north and north-west by the Bristol Channel; on the north-east by the county of Gloucester; on the east by Wilts; on the south by Dorset and Devon; and by the latter on the west. It contains 1,052,800 acres, of which about 900,000 are supposed to be arable, meadow, and pasture. With, perhaps, the single exception of Yorkshire, there is no county in England that has a greater variety of surface and soil than Somerset. In some places, particularly in its western and north-easterly divisions, it is hilly, and even mountainous: in the middle part of the county, between the rivers Ax and Parry, there are very extensive tracts of marsh land, which, in some places, is of extraordinary fertility (see *ante*, p. 28.): in other places, again, there are extensive moors, of which Exmoor, at the western extremity of the county, is the principal (*ante*, p. 17.). But, exclusive of these, the county contains a large extent of land equally adapted for tillage and pasturage. The vale of Taunton, already described (p. 21.), is one of the richest and most beautiful tracts in the kingdom. Tillage husbandry is neither extensively carried on, nor in the most approved

manner. The land is not injured by overcropping, but it is not properly wrought, and is frequently foul and out of order. Principal crops, wheat, oats, barley, and beans. In the southern and interior parts the rotation is, 1st, fallow; 2d, wheat; 3d, beans or seeds; 4th, oats: in the eastern part of the county it is generally, 1st, fallow; 2d, wheat; 3d, oats or barley; 4th, seeds. Potatoes are pretty extensively grown, but turnips are not cultivated to any extent in any part of the county. Lime is frequently used on the arable land; and, with the exception of dung, is the only manure that is employed. Drilling but little practised; beans mostly planted by the dibble. Labourers said to be indolent; and that they seem, when employed, as if they would rather stand still than exert themselves. — (*Kennedy and Grainger*, vol. i. p. 308.) A large proportion of the county is in grass; the dairy and fattening systems being both extensively carried on. Cattle principally of the Devonshire breed, but a great variety of other breeds are met with. The celebrated Chedder cheese is so called from a village of that name on the west side of the Mendip Hills; but it is now principally made in the marshes round Glastonbury. Bridgewater cheese is made from the marshes between that town and Cross. The stock of sheep in Somersetshire is supposed to amount to about 500,000 head, partly long and partly short woolled; and are estimated to produce, in all, about 10,500 packs a year. Large quantities of excellent cider are made in various parts, but particularly in the vale of Taunton. The woods and woodlands in different parts of the county are supposed, in all, to cover a space of from 20,000 to 25,000 acres; and it is distinguished by the stately growth of its hedgerow timber. Property very variously divided: some large estates, but a good deal of land occupied by yeomen who farm their own estates. Farms of various sizes, but the majority small. Leases, when granted, are usually for 8 or 12 years: in many instances, however, farmers hold at will. Average rent of land, 25*s.* 9*d.* an acre.* Mineral products numerous and valuable, consisting principally of coal, lead, calamine, fuller's earth, limestone, freestone, &c. Owing, however, to the lead mines having been nearly exhausted, or becoming more difficult to work, the produce of lead is now quite inconsiderable. The woollen manufacture used to be extensively carried on at Taunton; but it has given place to the silk trade, introduced in 1778, and at present prosecuted on a pretty large scale. The manufacture is still, however, carried on at Frome, Shepton Mallet, Wellington, and some other places in the county, but it has long been in a declining state. Gloves largely manufactured at Yeovil. Principal rivers, lower Avon (*ante*, p. 35.), Ax, Brue, Parret, and Exe. The Parret is navigable from Langport to its mouth. Taunton and Bridgewater are united by a canal; and there are canals in other parts of the county. Somersetshire is divided into 40 hundreds and 7 liberties, and contains 475 parishes. It returns 13 members to parliament; viz., 4 for the county; 2 each for the cities of Bath and Wells; 2 each for the boroughs of Bridgewater and Taunton; and 1 for Frome. Principal towns and population, in 1831,—Bath city, 50,802; Wells, 6,649; Frome, 12,240; Taunton, 11,139; Yeovil, 5,921. Population of county, in 1831, 403,908. Sum expended for the relief of the poor, in 1836, 140,442*l.* Annual value of real property, in 1815, 2,308,723*l.* Profits of trade and professions, in ditto, 1,329,266*l.* *

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* With the exception of Leicester and Middlesex, the latter of which, having the metropolis within it, cannot be compared with any other district, this is the highest rent of any county in England. This is, perhaps, ascribable to the great extent and excellence of the pastures of Somerset.

2. *Devonshire*, an extensive maritime county, having on the north and north-west the Bristol, and on the south and south-east the English, Channel: on the west it is bounded by Cornwall; and on the north-east and east by Somerset and Dorset. It contains 1,654,400 acres, of which about 1,200,000 are arable, meadow, and pasture. Surface and soil very various. Dartmoor, and the immediately contiguous country, extending from Okehampton on the north to Ugborough on the south, and from Ilsington, on the east, to near Tavistock on the west, exhibits an assembly of mountains, rugged moors, and swampy morasses, being one of the least valuable tracts in the kingdom. — (See *ante*, p. 12.) But, with the exception of this, and some other hilly and moorish districts of inferior extent, the county consists generally of good land. It has several extensive and well-sheltered vales, denominated "the gardens of the west," of which that of Exeter is the most celebrated. The soil consists principally of a reddish loam, which, in some places, particularly in the south, is largely intermixed with sand. Climate mild; but, owing to the advanced position of the county in the ocean, it is unusually moist. It is to this circumstance, more than any thing else, that the harvests in most parts of this county, as well as in Cornwall, are generally later by a fortnight at least than in the midland counties, 2½° or even 3° more to the north. Agriculture not nearly so advanced as in many other counties. It is mentioned by Vancouver (*Survey of Devonshire*, p. 44.), that it was common in North Devon, about 25 years ago, to authorise the tenants to take 3 or 4 white crops in succession! And, though nothing can be conceived more destructive than such a practice, it is affirmed that no native of the district would take a farm unless he were allowed this license. But Messrs. Kennedy and Grainger state, that the custom as to tillage has been so far improved, that tenants are now generally restrained from taking more than 2 white crops in succession under any circumstances, and two wheat crops unless after fallow. — (Vol. I. p. 198.) The most usual rotation is, 1st, wheat from a ley; 2d, barley or oats; 3d, seeds: or, 1st, wheat; 2d, turnips; 3d, wheat. The latter, were it properly managed, would, no doubt, answer extremely well; but there is, throughout the county, a great want of any regular system of cultivation, and the crops are very inferior. The wheat harvest in Devonshire, towards the beginning of the present century, must have been a species of saturnalia: in some parts the people engaged in it received no wages other than their victuals and drink; but these seem to have been a more than adequate compensation for their services. We un-

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* The *Survey of Somersetshire* is very defective. It was published so far back as 1797; and communicates but little information on which it would now be safe implicitly to depend.

derstand, however, that these practices have now fallen into comparative disuse. — (*Vancouver's Survey of Devon*, p. 146.) Barley formerly constituted a large proportion of the bread-corn used in farm-houses and by the peasantry; but within the last 20 years the use of wheaten bread has been so much extended as to have, in a great measure, superseded that made of barley. Potatoes extensively cultivated, particularly in the southern parts of the county; large quantities being shipped at Dartmouth and other towns. Sea-weed and sea-sand are frequently used as manure, and often with very good effect. Orchards, especially those on the western side of the county, very extensive, and much depended on. Their produce is estimated to amount, at an average, to about 3⅖ hhds. of cider per acre. Though of various sorts, Devonshire cider may, speaking generally, be said to be harsh and acid; and to these qualities, and the freedom with which it is drunk, is ascribed a species of colic prevalent among the lower orders. Devonshire breed of cattle reckoned one of the best in the empire. They fatten easily, yield excellent beef, and are superior to all other breeds in field labour; being, though rather light, active, docile, and willing to exert themselves to the utmost. They are extensively employed in the labours of the field and on the road. As respects the dairy, they are, perhaps, inferior to some other breeds; but their milk, though deficient in quantity, yields more than the ordinary proportion of cream and butter. In the vale of Exeter, which is a dairy district, there are all sorts of cattle. Dairies, indeed, in most parts of the county, are an important source of profit. The farmers frequently let their cows to a dairyman by the year at so much a head; but the most industrious uniformly undertake the management of the dairy. This county is famous for its clouted cream. The Exmoor and Dartmoor breeds of sheep are the most celebrated of the indigenous varieties belonging to the county; but most other British varieties are met with in it. The total stock of sheep is estimated at about 630,000, of which nearly 200,000 produce heavy fleeces of long combing wool. The total annual produce of wool is estimated at about 15,500 packs. Horses, a small compact breed; but they are said to be less attended to and worse treated in this than in any other English county; a consequence, perhaps, of the superiority of the Devonshire oxen, and their more general employment. Property much subdivided. Farms of all sizes, from 5*l.* to 500*l.* a year; but the great majority small. The small occupiers, like their brethren elsewhere, are said to work hard, and to fare very indifferently. Farm-houses and offices rather inferior; and, in North Devon, they are said to be situated so as "to defy the utmost efforts of ingenuity to dispose and place them where the purposes of their establishment could be worse, or more ineffectually, answered." — (*Survey*, p. 86.) Average rent of land, 14*s.* 8¼*d.* an acre. Tin, copper, lead, iron ore, and manganese are met with; and the first 2 are wrought to a considerable extent. Granite, freestone, limestone, and slate are particularly abundant. About 28,000 tons of clay, raised near Kingsteignton, Bovey, and other places in that part of the county, are annually exported to the potteries in Bristol, Swansea, and Staffordshire, particularly the latter. The woollen manufacture, which was formerly prosecuted on an extensive scale at Exeter, Crediton, and other parts of the county, is now much decayed. The lace manufacture of Honiton is, unfortunately, also in this predicament. The principal rivers are, the Exe, the Dart, and the Tamar, falling into the English Channel. The Tamar divides Devon from Cornwall. The Taw and the Torridge unite in a large æstuary communicating with Barnstaple Bay, on the north-west coast of the county. Several canals have been completed, and others have been projected. Devon contains 33 hundreds and 465 parishes. It returns 22 members to parliament; viz., 4 for the county; 2 for the city of Exeter; 2 each for the boroughs of Plymouth, Devonport, Barnstaple, Honiton, Tavistock, Tiverton, and Totnes; and 1 each for the boroughs of Ashburton and Dartmouth. Principal towns and population, in 1831,—Devonport, 44,454; Plymouth, 31,080; Exeter city, 28,201; Tiverton, 9,766; Tavistock, 5,602. Population of county, in 1831, 494,168. Sum expended for the relief of the poor, in 1836, 172,406*l.* Annual value of real property, in 1815, 1,924,912*l.* Profits of trade and professions, in ditto, 757,444*l.*

3. *Cornwall*, a maritime county, and the most westerly in England, is everywhere bounded by the sea, except on its eastern side, which borders upon Devonshire, from which it is principally separated by the Tamar. It contains 851,200 acres, of which about 650,000 are arable, meadow, and pasture. The appearance of Cornwall is not inviting. Surface rugged, and in many places incumbered with immense masses of granite. Brown Willy, the highest hill, has an elevation of 1,368 feet above the level of the sea. There is a moorish sterile tract of great extent, stretching from Davidstow, on the north, to near St. Neot's, on the south; and from North-hill, on the east, to Blisland, on the west. But there is, notwithstanding, a considerable extent of fertile land, particularly on the banks of the Alan, the Fowey, and the Fal. Generally speaking, the soil is light, and is largely intermixed with gravel. The country is bare of wood; but a good many plantations have been formed of late years, especially in the eastern parts adjoining Devonshire. The climate of Cornwall, particularly of the western parts, has been highly commended on account of the superior equality of its temperature; the land being so much embosomed in the Atlantic, that it is neither sultry in summer, nor particularly cold in winter. At Penzance and Mount's Bay, frost, if it occur, is but of a few hours' duration; and snow seldom falls, and still seldomer lies for any considerable period. The progress of vegetation is but little checked during the winter months, and the meadows retain their verdure throughout the year. On the other hand, however, owing to the moisture of the air, and coolness of the summers, the fruit is inferior in flavour to that raised in the more easterly and midland counties. The grape rarely ripens in the open air; and even the walnut and common hazel-nut seldom bear fruit. Cornwall is very subject to frequent rains, but they are not very heavy; and the quantity that falls is said to be rather under the mean of all England. According to Dr. Paris (to whose *Guide to Mount's Bay and the Land's End*, pp. 6—13., we are indebted for these particulars), the western parts of Cornwall are a peculiarly eligible resi-

dence for invalids. Considering the nature of the soil, and its remote situation, agriculture is considerably advanced in Cornwall. Wheat, barley, oats, and rye are the crops most commonly cultivated. With the oats is included the naked oat, provincially called *pillar*, from the Cornish word *pilez*, bald. It is principally used in making gruel for calves, and as food for poultry. The usual rotation is, 1st, wheat from a ley; 2d, oats; 3d, potatoes or turnips; 4th, barley; 5th, seeds, which remain down at least 3 years. Potatoes are very extensively cultivated. In the vicinity of Penzance the land produces 2 crops in a season; and an acre has been known to yield 300 bushels (Winchester measure) of early potatoes for the first crop, and 600 bushels, of a later species, for the second! Lime is largely employed as a manure, as are sea-sand and weeds, refuse pilchards, &c. Cattle of various breeds. The indigenous variety is small, black, hardy, and coarse; but the prevailing breed is a cross between the native variety and the North Devons. But little cheese is made in Cornwall, and that little is said to be exceedingly bad. The excellence of the Cornish butter, of which considerable quantities are made, is, however, universally admitted. The stock of sheep in Cornwall is estimated at about 200,000, producing 5,900 packs of wool a year. Property much divided, and "vexatiously intermixed." Farms mostly small, and held under lease for 14 or 21 years. The custom of the county as to the entry to farms is bad, and has a very injurious influence on agriculture. Average rent of land, 10*s.* 3¾*d.* an acre. Cornwall is famous for its tin and copper mines, which rank among the most productive of their kind in the world. The tin mines are believed to have been wrought from the æra of the Phœnicians; but the copper mines, though discovered at a comparatively recent epoch, are now become of far greater value and importance. — (See section on *Minerals.*) There are also mines of lead, slate, soapstone; and small quantities of gold and silver have been met with. About 5,000 tons of soapstone, and 7,000 tons of China clay, are annually shipped from Charlestown and Pentewan, principally for the Potteries. The pilchard fishery is carried on along the coast, particularly at St. Ives, Mount's Bay, and Mevagissey; and is a source of considerable wealth to the county. — (See *Fisheries.*) Principal rivers, Tamar, Lynher, Fowey, Camel, and Fal. Cornwall contains 9 hundreds and 203 parishes. It used to return 42 members to parliament, but now it returns only 14; viz., 4 for the county; 2 each for the boroughs of Bodmin, Falmouth, and Truro; and 1 each for the boroughs of Helston, St. Ives, Launceston, and Liskeard. Principal towns and population, in 1831, — Truro, 11,417; Helston, 10,845; Penzance, 8,621; St. Ives, 7,115; Falmouth, 7,284. Population of the county, in 1831, 302,440. Sum expended for the relief of the poor, in 1836, 74,856*l.* Annual value of real property, in 1815, 922,259*l.* Profits of trade and professions, in ditto, 230,112*l.*

Wales.

This ancient principality has a large extent of sea-coast, being bounded on the north by the Irish Sea; on the west by St. George's

Channel; on the south by the Bristol Channel; and on the east by the counties of Monmouth, Hereford, Salop, and Cheshire. It is usually divided into North and South Wales; the former containing the counties of Anglesea*, Caernarvon, Denbigh, Flint, Merioneth, and Montgomery; and the latter those of Brecon, Caermarthen, Cardigan, Glamorgan, Pembroke, and Radnor. In all, Wales is supposed to contain 4,752,000 acres, of which 3,117,000 are said to be arable, meadow, and pasture. Surface mountainous and hilly. Snowdon, in Caernarvonshire, the highest mountain in Wales, is elevated 3,571 feet above the level of the sea. Cader Idris and Cader Ferwyn, both in Merionethshire, have an elevation, the former of 2,914, the latter of 2,563 feet; the Beacons, in Brecknockshire, rise to the height of 2,862; Plynlimmon, in Cardiganshire, to 2,463 feet; and there are many other mountains dispersed through the principality of an altitude varying from 1,500 to 2,300 feet. The climate is moister than that of England, in the proportion of 34, the average number of inches of rain which fall in Wales, to 22, the average fall in England. The temperature is materially affected by the elevation of the land: in the vales it is unusually mild; on the more elevated grounds and mountainous ridges it is cold and piercing; but even in the northern counties the frosts are seldom of long continuance. The vale of Glamorgan, and the southern parts of Pembrokeshire, are particularly celebrated for the mildness of their climate. Snow never lies long on the ground; and myrtles, arbutus, and other tender shrubs, bear the open air as well as on the opposite coasts of Devon and Cornwall. Owing, however, to its humidity, the climate of Wales is more suitable to pasturage than to the raising of corn. The soil is, for the most part, of an inferior description; but there are some vales of extraordinary fertility. Of these the principal are the vale of Clwyd, in the north; and the vale, or rather *level*, of Glamorgan in the south. The latter is very extensive: it consists principally of clay soil; and, when well cultivated, produces the finest crops of wheat. The agriculture of Wales is altogether bad. Improvements have made less progress in it than in almost any other part of the empire. Speaking of Caermarthenshire, Messrs. Kennedy and Grainger observe, — "The soil is very fertile: it in general consists of a sandy loam; nor is there finer land any where in Great Britain than is to be found in some parts of this county, either for the growth of turnips or for the feeding of sheep. These advantages, however, are not here of much avail; as whatever requires a little trouble, or is over and above the natural productions of the land, is thought quite unnecessary, and is totally neglected. There never existed, indeed, a country more erroneously conducted, as to its agriculture, than Caermarthenshire; *nor does Wales in general produce half what it is capable of doing under proper management*."—(P. 169.) The statements of the same gentlemen in reference to Denbigh, Glamorgan, and other counties, are precisely similar. A rotation of crops, on sound principles, is but seldom introduced. In Caermarthenshire "the first crop is wheat, after which there are regularly two crops of barley taken, and then oats are sown as long as they will grow. When the land is entirely exhausted, some farmers will be at the expense of a few grass-seeds to lay it down; but others let it return again naturally to pasture, and it then has rest for 6 or 7 years longer before it goes through the same round, only having a few beasts running upon it."—(*Kennedy and Grainger*, p. 172.) In Anglesea it was customary, about 20 years ago, to take 5 white crops in succession, most of which were so poor as hardly to pay their expenses; but an improved system is in course of being gradually introduced. Oats are far more extensively cultivated than any other species of grain: in the mountainous districts black oats are most frequently raised. Turnips and potatoes have been introduced; and the culture of both is extending, but particularly that of the latter. The Welsh plough, which is still in common use, is a wretched implement: it does not cut, but tears the ground by main force. The land is frequently, indeed, not more than half ploughed. In some places the team consists of a pony and a half-starved riding horse, or a pony and a pair of small oxen, with a girl to drive them. There is every where a great want of drainage. The horses, cattle, and sheep differ according to the nature of the pastures. In the vales they are of a larger size than on the hills and mountains, and are more intermixed with other breeds. The small native Welsh ponies (*Merlins*) are now seldom met with, except in Merioneth and Montgomery, in the former of which they are still raised in considerable numbers. They are sure footed, and exceedingly hardy. The vales of Montgomery have been long noted for a superior breed of horses. The rearing of black cattle is a principal part of Welsh husbandry, the farmers depending mainly on them for the means of paying their rent and other outgoings. Cattle differ in different parts of the country, according to the abundance of food, the care with which they are attended to, &c. They mostly belong to the *middle-horned* variety, and are rather stunted in their size. Pembroke and Glamorganshire have probably the best cattle. A cross between an Ayrshire bull and a Glamorgan cow has recently begun to be held in high estimation; being accounted better milkers, hardier, and more easily kept than the native cattle. Numbers of small black cattle are raised in Anglesea; 5,861 having been annually sent across the Menai bridge, at an average of the 3 years ending with 1833; but of these about 500 were Irish cattle landed at Holyhead.* The total stock of sheep is estimated at about 1,250,000, and the annual produce of wool at above 10,000 packs. The mutton of the mountain sheep is highly esteemed. Estates of all sizes, from 20*l.* a year up to 30,000*l.* The custom of gavelkind formerly prevailed in Wales, the consequence of which was a too minute division of property. "Equality and poverty went hand in hand. But when the custom was abolished, and alienation permitted, an accumulation of lands was the necessary consequence, which became very prevalent in the last two centuries; and, having arrived at its maximum early in the 18th century, it has, since that period, shown some instances of retrogradation." — (*Davies's North Wales*, p. 76.) — Farms of various sizes: some large; but the great majority small. The average size of those in South Wales is estimated at from 50 to 60 acres. Leases not uncommon, but ill-contrived: for the most part they contain no regulations as to management, so that the farm is completely exhausted previously to the close of the lease. The great majority of the old farm-houses and offices wretched in the extreme, and very ill-placed. But farm buildings, of a new and improved construction and appearance, are now to be met with in most parts of the country, and are gradually becoming more numerous. Cottages in North Wales used to be almost as bad as those of Ireland; but they, also, are improving. Those of South Wales are preferable. In Glamorganshire the cottages are very superior, being constructed of stone and mortar, and whitewashed inside and outside. In Pembroke, the walls of the cottages, and even farm buildings, frequently consist of mud or clay. Average rent of land, 6*s.* 8*d.* an acre. Wales is particularly rich in minerals. The famous copper mine of Parys, in Anglesea, discovered in 1768, was, for many years, singularly productive; but it is now much fallen off. The lead mines of Cardigan, once so famous, have been wholly abandoned; and those of Flintshire have declined. The latter, however, are still very productive. In 1828, the lead mines of Wales are estimated to have produced, in all, 12,000 tons of pig lead; of which Flint and Denbigh, but particularly the former, furnished by far the largest portion."— (*Ency. Metrop.* Part xxxix. p. 195.) Both divisions of the principality have coal; but the coal-field of South Wales is the largest in the empire, and may, for all practical purposes, be looked upon as inexhaustible. Being, also, well supplied with ironstone, as soon as experience had disclosed the superiority of Lord Dudley's plan for preparing iron by means of pit-coal, the attention of capitalists and speculators began to be particularly directed to the capabilities of South Wales for the production of iron. Works were, in consequence, commenced at Merthyr Tydvil, and other places, not long after the middle of last century; and such has been their success, that the quantity of iron made in South Wales in 1830 was estimated at 277,000 tons, while that made in Staffordshire and the rest of England did not materially exceed 300,000 tons.* There were, during the same year, 25,000 tons of iron produced in North Wales. The Welsh-slate quarries, particularly those in the vicinity of Bangor, are very extensive, and furnish slates of all sizes, and of the most excellent quality. Limestone is particularly abundant. Almost all the copper raised in Cornwall is carried to Swansea, and other places in

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* This island is celebrated as the Mona of Tacitus. It was the principal seat of the religion of the Druids, its groves being *sævis superstitionibus sacri*. — *Annal.* lib. xiv. § 30.) Anglesea is now joined to the mainland by the Menai Bridge. — (See *ante*, p. 50.) It contains 173,440 acres.

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* Mr. Youatt says (*Cattle, their breeds, &c.*, p. 59.) that at least 10,000 Anglesea cattle are now annually sent across the Menai bridge; but the official statement, given above, shows that this is about double the actual number. The imports of sheep from Anglesea are increasing. They amounted, in 1833, to 8,358.

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* The ironstone of Wales is poorer than the ores of Stafford, and other parts of England; but the contiguity of the stone to coal, and the comparative facility with which both are raised, more than compensates for the poverty of the metal.

South Wales, to be smelted; and, in all that respects the smelting and refining of ores, the Welsh are equal, if not superior, to the inhabitants of any other district. Woollens, particularly flannel, for which Wales has long been celebrated, are made in various parts, but more largely in Montgomeryshire than anywhere else. Gloves are extensively manufactured at Denbigh; and stockings in different parts of the country. The cotton manufacture has been successfully introduced into Flint and Denbigh. The towns of Mold and Holywell are particularly distinguished by their activity in manufacturing industry. The Welsh language is still in common use in most parts of the principality; but most individuals now understand English. Wales abounds in rivers. The great rivers Severn, Dee, and Wye have their sources in the principality; and besides these there are the Clwyd, Conway, Wnion, Dyfi, Teify, Towy, Tawe, Neath, Taffe, &c. Some of these rivers are navigable to a considerable distance; and internal communication in South Wales is now much facilitated by means of canals and railroads. The common roads of the principality, which at no distant period were excessively bad, have within these few years been very much improved. Many new and comparatively level lines have been cut, and most of the old lines have been materially meliorated. The great road from Shrewsbury to Holyhead, by the Menai Straits, is, perhaps, the very best in the empire. Notwithstanding its great extent of sea coast, and the advantage it enjoys in the possession of Milford Haven, Wales has but little commerce and shipping. Wales contains 869 parishes. The principality returns 29 members to parliament: viz., 2 each for the counties of Caermarthen, Denbigh, and Glamorgan; 1 each for the counties of Anglesea, Brecon, Cardigan, Caernarvon, Flint, Merioneth, Montgomery, Pembroke, and Radnor; 1 each for the boroughs of Brecon and Merthyr Tydvil; and 1 each for the several districts of boroughs, of which Beaumaris, Caermarthen, Cardigan, Caernarvon, Denbigh, Flint, Cardiff, Swansea, Montgomery, Pembroke, Haverfordwest, and Radnor are the principal or returning boroughs. Principal towns and population, in 1831, — Merthyr Tydvil, 22,083; Swansea, 13,256; Cardiff, 6,187; Pembroke, 6,511. Population of principality, in 1821, 717,438; in 1831, 805,236. Sum expended for the relief of the poor, in 1836, 255,549*l.* Annual value of real property, in 1815, 2,323,970*l.* Profits of trade and professions, in ditto, 400,807*l.*

Islands.

Exclusive of the Isle of Wight and Anglesea, already noticed (*ante*, pp. 215. 223.), there are a few islands dependent on England, of which the following are the principal: —

Channel Islands. — These, which form the only remains of the Norman provinces once subject to the British crown, lie in the English Channel, a little to the west of the peninsulated department of *La Manche* in France. They consist of Jersey, Guernsey, Alderney, and Sark, with some dependant islets. Alderney, the most northerly, and the nearest to England, is about 55 miles south from the Isle of

Portland. Jersey, the largest and most valuable, is supposed to contain about 40,000 acres, and Guernsey about 32,000. The population, in 1831, was — Jersey, 36,582; Guernsey, 24,349; Alderney, 1,045; Sark, 543; other islands, 191: in all, 62,710.

Jersey is fertile, well wooded, and has a rich and beautiful appearance. Guernsey is less fruitful, and has much less wood; but it also possesses a considerable extent of productive soil. Climate peculiarly mild and agreeable. Agriculture, even in Jersey, the most improved and flourishing of the islands, is still far behind. This seems to be principally ascribable to the minute division of the land; property having been so much frittered down by the law of equal division, that the average size of estates does not exceed fifteen acres, while one small field has sometimes half-a-dozen owners. Wheat and barley, especially the former, are the principal corn crops raised in the island. According to the official returns, the produce per acre of wheat is very large, being nearly 5 quarters. We have little doubt, however, that this is very decidedly beyond the mark; and we are confirmed in this belief by observing that the returns make the produce per acre of wheat and barley exactly the same. — (*Parl. Paper*, No. 74. Sess. 1835.) Lucerne, potatoes, and parsnips are extensively cultivated, particularly the latter. Cider is one of the principal products of Jersey; and it is said that, at an average, about 150,000 gallons a year are exported. Sea-weed is the chief article of manure used in all these islands; the cutting and gathering of it being subjected to peculiar regulations.

The agriculture of Guernsey is, in most respects, similar to that of Jersey. Cider is, however, less an object of attention. The produce of wheat in Jersey is at present estimated at about 13,000 quarters a year, and that of barley at about 3,200 quarters; being, together, about adequate to supply *half* the demand of the population. In Guernsey, the annual average growth of wheat is estimated at 4,000 quarters, and of barley at 3,800 quarters; making only about a *fourth part* of the quantity required for its supply. The deficiency is made up by importations from France, the north of Europe, &c.; and it has been suspected that some portion of the foreign corn imported into the islands finds its way into the English market free of duties. — (*Parl. Papers*, Nos. 74. and 289. Sess. 1835.) Land in Jersey and Guernsey brings a very high rent.

The Channel Islands are celebrated for a peculiar breed of cattle, known in this country by the name of Alderney or Norman cattle. They are small, and far from handsome; but seem to be well suited to their native soil. They do not give much milk; but what they do give is rich and excellent, producing an extra quantity of very superior butter: hence their general introduction into gentlemen's parks and pleasure grounds. Otherwise the breed is but little esteemed in this country. In the islands, however, it is held in the highest estimation; so much so that, in both Jersey and Guernsey, the importation of any other description of cattle is prohibited under the severest penalties! — (*Inglis's Channel Islands*, 2d edit. p. 129.) Cattle and their products form a principal article of export from Jersey. But few sheep are kept. The oyster fisheries of Jersey are of considerable importance and value; 208,023 bushels a year having been shipped for England, at an average of the 4 years ending with 1832. The peculiar red-legged Guernsey partridge is now extensively introduced into England. — (See *antè*, p. 126.) The islands possess some valuable quarries. Worsted stockings, of a very fine quality, have been accounted the staple manufacture of Jersey; and she annually exports large quantities of boots and shoes made of leather brought from France.

Owing to the various privileges which they enjoy, particularly their almost total exemption from taxation, their being allowed to export all articles of the growth, produce, or manufacture of the islands to England and the English colonies, on the same footing as other British subjects, and their favourable situation for carrying on a contraband trade, the commerce of Jersey and Guernsey is extensive and important. Their mercantile marine has rapidly increased. In 1832 Jersey had 216 registered ships, of the burden of 20,250 tons, exclusive of nearly 500 large boats, about 300 of which were engaged in the oyster fishery. Guernsey had, at the same time, 80 ships, of the burden of 9,158 tons. All sorts of timber and cordage being admitted duty free into the islands, we need not wonder that great numbers of vessels are now annually built in them; but we may well wonder that they should be permitted to enjoy a valuable privilege of this sort, denied to the ship-owners and ship-builders of the rest of the empire.

The government of the islands is in the hands of states, some members of which are named by the king, while others are chosen by the people, and others sit *ex officio*. Party spirit runs very high in Jersey. The natives speak corrupt French; and are industrious and penurious. Causes are determined by their own officers; but an appeal may be made to the king in council. These islands are a very costly appanage of the British crown. They have been fortified at an immense expense; and their defence in time of war is supposed to cost fully 500,000*l.* a year, which has to be wholly defrayed by England; the total revenue collected in the islands not amounting to 20,000*l.* a year. Even in peace they occasion a heavy charge. The advantages derived from their possession seem neither very obvious nor very material. Principal towns, St. Helen's in Jersey, and St. Peter-le-Port in Guernsey. The former had, including the parish, in 1831, a population of 16,027; and the latter, of 13,893. — (See *Quayle's Survey of Jersey and Guernsey;* and *Inglis's* excellent work *on the Channel Islands.*)

The Scilly Islands lie about 30 miles west by south from the Land's End. The total number of islands and rocks is very great; but there are only about half-a-dozen of any importance. St. Mary's, the largest, is said to contain 1,640 acres: their entire area, as given in the population returns, is only 5,570 acres. In 1831 they had a population of 2,465. Small quantities of wheat, barley, and oats are raised; but the inhabitants, who are often involved in great distress, principally support themselves by fishing. They also act as pilots to such ships as may require their services. These islands are supposed by some to be the *Cassiterides*, or tin islands, of the ancients. But it is most probable that the ancients gave this name to the western parts of Cornwall, where tin mines have been wrought from the remotest antiquity. A lighthouse was erected on St. Agnes island in 1680, the lantern of which is elevated 138 feet above high water mark. It is, according to the ordnance survey, in lat. 49° 53′ 38″ N., long. 6° 19′ 23″ W.*

The Isle of Man is not, strictly speaking, an English island, but it may be as well described here as anywhere else. It is situated in the Irish Sea, about 20 miles from the Burrow Head in Scotland; its distance from the nearest points of England and Ireland not being much more considerable. It is about 30 miles long, and from 10 to 12 broad; containing about 180,000 acres.† It had, in 1831, a population of 41,000.

Man is divided into two nearly equal parts by a chain of mountains that runs through it in a longitudinal direction. Sneafell, the highest summit in the island, is elevated 2,004 feet above the level of the sea. Soil various; for the most part sandy and loamy; but stiff clays are met with. It is nowhere very productive. Climate milder than in the adjacent parts of Great Britain and Ireland, particularly in winter. Frost and snow rare; and, when they occur, of but short continuance. In consequence, however, of the greater humidity of the climate, the summers are deficient in heat, and harvest is, in general, rather late. The mountains, commons, and other waste lands are supposed to include about 54,000 acres; leaving above 100,000 acres for the purposes of cultivation. Agriculture a good deal improved, but still very backward. The extent of land under white crops, and the average produce of each, is estimated to be —

Wheat,	8,000 acres	at 2½	quarters per acre,	21,250	quarters.
Barley,	5,000	— 4	ditto,	20,000	do.
Oats,	13,000	— 3	ditto,	39,000	do.

This is supposed to leave a surplus of about 5,000 quarters of wheat and 3,000 of barley over the consumption. — (*Parl. Paper*, No. 74. Sess. 1835.)

Potatoes extensively cultivated: turnips, also, are raised, and flax for home use. Marl, lime, and sea-weed are used as manures. Man had a native breed of small hardy cattle, but they are now rarely met with; the existing stock being a mixture of various breeds, Irish and British. Ayrshire cattle have recently been introduced, it is said, with much advantage. The native sheep of the island are small and hardy, but slow feeders, and long in coming to maturity. They are mostly white, but many are grey, some black, and a few of a peculiar dark buff colour. This breed is still found in the hills; but the lowlands are now mostly stocked with improved breeds. Since the introduction of two-horse ploughs, the native breed of small hardy horses has been, to a considerable extent, supplanted by others of larger size and strength. Property seems formerly to have been divided into very minute and nearly equal portions; and such are its characteristics at present. By far the largest portion of the island is possessed by yeomen farming their own little estates, consisting of from 10 to 200 acres; and possessing mostly a portion of lowland with hill pasture. There are but few properties in the island worth above 1,500*l.* a year.

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* It is stated (*antè*, p. 52.) that Sir Cloudesley Shovel was wrecked on these islands in 1705. But this is a typographical error: the catastrophe occurred on the 22d of October, 1707.

† This is the statement of Mr. Quayle, in his *Survey* of the island. In the *Parl. Paper*, No. 74. Sess. 1835, the island is said to contain only 134,000 acres. Perhaps, the former is an exaggerated statement; but we have little doubt that the latter is below the mark.

Man used to be one of the principal seats of the herring fishery; but for several years past it has been comparatively deserted by the herring shoals, and the fishery has, in consequence, become quite inconsiderable. This, however, is hardly to be regretted. The fishery was carried on from July to October; being the period of the year when the services of the yeomen, and others engaged in it, were most necessary at home. Being, also, a species of lottery, in which large sums were occasionally made by a few weeks' exertion, it attracted crowds of adventurers without either capital or skill; while the irregular life they led at the fishery tended to foster habits of intemperance, and was believed to be the main cause of that idleness for which the people have been long proverbial. — (*Quayle's Survey*, p. 147.) There has, in fact, been a material improvement in the habits of the people, and in their industry, since the decline of the fishery; and there are, perhaps, few things that would be more injurious to the island than its revival.

The feudal sovereignty of Man was formerly vested in the Earls of Derby, and more recently in the Dukes of Atholl. There has always been a considerable difference between the duties on commodities in it and in Britain. This discrepancy led, towards the middle of last century, to a great deal of smuggling from the Isle of Man to the contiguous coasts of England, Scotland, and Ireland. To put an end to this, parliament purchased, in 1765, the feudal rights of the Duke of Atholl; and, since then, the contraband trade has been confined within comparatively narrow limits. But the duties on almost all foreign articles consumed in the island, being still decidedly lower than those on the same articles when entered for consumption in Britain, it becomes necessary, for the prevention of smuggling, to limit the quantity of such articles that may be imported into the island, and to keep up a considerable extra number of custom-house officers and revenue cruisers; and, after all, the evil still exists, though not to a great extent. It were better for all parties that this discrepancy in the duties, and the vexatious regulations that grow out of it, should be put an end to. Man lies in the line of the steam packets plying between Liverpool and Glasgow, and Liverpool and Dublin, most of which, indeed, touch at Douglass; and it is not easy to imagine that any thing can exceed the anomalous absurdity of having a considerable territory, situated in the very centre of the empire, and much resorted to, with peculiar duties and revenue laws.

The government, political institutions, and laws of Man are in many respects peculiar. The legislative and judicial authority is principally vested in the House of Keys, formerly a delegated, but, for many years past, a self-elected, body, consisting of 24 individuals. Two deemsters, officers of great antiquity, are judges in common and criminal cases. The governor is named by the king; and has a council, consisting of 4 or 6 individuals, who hold their seats *ex officio*. The keys, deemsters, governor, and council constitute the parliament, or, as it is called, the *Tynwald Court* of the island. Its privileges, though much impaired, are still considerable. A grand court is annually held at midsummer at the Tynwald Mount, near Peel; and no law is binding till it has been publicly read and proclaimed at this assembly.

The Manx language is still in common use. It is derived from the ancient Celtic; but has a greater affinity to the Erse and Irish than to the Welsh or Armoric. All the inhabitants can, however, speak English; and it is probable that, in no very long time, the Manx language will be entirely laid aside.

Lead mines and slate quarries are both wrought to some extent near Peel, on the west side of the island. Limestone is abundant, and lime is prepared in considerable quantities. Manufactures inconsiderable. In 1836 there belonged to the island 242 registered vessels, of the burden of 7,229 tons, manned by 1,297 seamen. At present timber may be imported into it for ship-building, or any other purpose, on paying an *ad valorem* duty of 10 per cent. Should it be permitted to enjoy this valuable privilege, and the timber duties be continued on their present footing in Great Britain, the fair presumption seems to be that it will engross a large share of the ship-building business. Douglass, by far the largest town in the island, had in 1831 a population of 6,786. It is pretty well built; and is much resorted to in summer by visitors from Liverpool and other places. None of the other towns had, in 1831, a population of 2000; and, owing to the failure of the herring fishery, and the prevalence of emigration, the population has of late increased very slowly.

Exclusive of the official paper and *Quayle's Survey*, already referred to, we have consulted the excellent article on Man in *Rees's Cyclopædia*, &c. *Feltham's Tour in Man in* 1797 *and* 1798 (8vo. Bath, 1799) contains, however, by far the best account of the island that we have met with.

Exclusive of the above, a few small islands lie off other parts of the English coast; such as the Fearn Islands off Northumberland; the Flat and Steep Holms in the Bristol Channel; Ramsey, Bardsey, &c., off Wales; but they are too inconsiderable to merit notice.

CHAPTER II. — SCOTLAND.

SECT. 1. — *Name. — Extent. — Face of the Country.*

Name. — THE origin of the term Scotland is involved in much obscurity. That part of Great Britain beyond the Friths of Forth and Clyde was made known to the Romans by the victories of Agricola, and was discriminated by them from the rest of the island by the special appellation of Caledonia. The inhabitants of this district, the

Caledonians of Tacitus, were afterwards known by the name of Picts [*]; and from them the country was for some centuries called Pictland. The term Scotland began to come into use, for the first time, in the eleventh century. This new name had been previously applied to Ireland; and is said to have been given to the country of the Picts by the Irish clergy, by whom the rude and ignorant natives were instructed in the Christian religion. A colony of Scots (the Dalriads of the venerable Bede, and the Attacotti of Ammianus Marcellinus) had previously left Ireland, and planted themselves in Argyleshire and the West Highlands; and they are supposed by some to have conquered the Picts, and thence to have given their name to the country. But this does not appear to have been the case; as the Saxon and Irish authors continued to use the terms Picts and Pictland long after the conquest by the Scotch or Attacotti is supposed to have taken place. — (See *Pinkerton's Geography*, vol. i. p. 145.; and his *Inquiry into the Early History of Scotland*, passim.)

Extent. — The longest line that can be drawn in Scotland is from its most southerly point, the Mull of Galloway, in lat. 54° 38′ N., long. 4° 52′ W., to Dunnet Head, its most northerly point, in lat. 58° 40′ 30″ N., long. 3° 22′ W., or about 280 miles; but the longest line that can be drawn in about the same parallel of longitude is from the Mull of Galloway to Cape Wrath, in lat. 58° 37′ N., long. 5° W., being about 274 miles. The breadth is extremely various. The country is so much penetrated by friths or arms of the sea as to be in no place more than 40 miles from shore. Between Buchanness Point, on the Aberdeenshire coast, and Rowanmoan Point, on the west coast of Ross-shire, the distance is about 146 miles; from Montrose Point to the point of Ardnamurchan in Argyleshire, in lat. 56° 45′ N., long. 6° 8′ 30″ W., being the most westerly land in Great Britain, the distance is about 139 miles; and it is nearly as much between St. Abb's Head and the point of Knap in Argyleshire. But between Alloa, on the Frith of Forth, and Dunbarton, on the Clyde, the breadth is only 32 miles; and between the bottom of Loch Broom and that of the Frith of Dornoch it is not more than 24 miles. [†]

Owing to the extreme irregularity of its figure, and the want of complete surveys, great differences of opinion have been entertained as to the area of Scotland. Mr. Templeman of Bury computed it, inclusive of the islands, at 27,794 square miles, or 17,788,160 acres. But, though this estimate has been adopted by Pinkerton and others, there can be no doubt that it is considerably under the mark. The elements of the following table, deduced from Arrowsmith's map, are given in the *General Report of Scotland*. In so far as respects the mainland it cannot differ materially from the truth; but the estimates of the area of the islands are not generally entitled to much weight, and can be regarded only as a rough approximation.

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[*] The identity of the Caledonians and Picts has been denied by some writers; but appears to be sufficiently established by Pinkerton, in his *Inquiry into the Early History of Scotland*, vol. i. pp. 103—120.

[†] In the *General Report of Scotland*, this distance is erroneously said to be 36 miles.

TABLE showing the Total Extent of the several Counties of Scotland in Square Miles and English Statute Acres: specifying the Extent of the Land and of the Fresh Water Lakes in each county; and showing the Fractional Part of the entire Area of Scotland, supposing it to be 1,000, contained in each County: —

Counties.	Extent in Square Miles.			Extent in English Statute Acres.			Corresponding Proportions of each County to 1000, assumed as the Total Area of Scotland.
	Land.	Lakes.	Total.	Land.	Lakes.	Total.	
Aberdeen - -	1,960	10	1,970	1,254,400	6,400	1,260,800	65·149,811
Argyle, besides Islands - -	2,200	60	2,260	1,408,000	38,400	1,446,400	74·740,393
Ayr - -	1,039	6	1,045	664,960	3,840	668,800	34·559,164
Banff - -	645	2	647	412,800	1,280	414,080	21·396,918
Berwick - -	442	- -	442	282,880	- -	282,880	14·617,369
Caithness - -	687	10	697	439,680	6,400	446,080	23·050,466
Clackmannan -	48	- -	48	30,720	- -	30,720	1·587,407
Cromarty - -	256	10	266	163,840	6,400	170,240	8·796,878
Dunbarton - -	228	31	259	145,920	19,840	165.760	8·565,381
Dumfries - -	1,253	10	1,263	801,920	6,400	808,320	41·768,635
Edinburgh - -	354	- -	354	226,560	- -	226,560	11·707,123
Elgin - -	473	7	380	302,720	4,480	307,200	15·874,066
Fife - -	467	3	470	298,880	1,920	300,800	15·543,356
Forfar (Angus)	888	4	892	568,320	2,560	570,880	29·499,305
Haddington -	272	- -	272	174,080	- -	174,080	8·995,304
Inverness, besides Islands	2,904	132	3,036	1,858,560	84,480	1,943,050	100,403,466
Kincardine - -	380	2	382	243,200	1,280	244,480	12·633,111
Kinross - -	72	7	79	46,080	4.480	50,560	2·612,607
Kirkcudbright -	821½	12½	834	525,760	8,000	533,760	27·581,189
Lanark - -	942	3	945	604,880	1,920	604,800	31·252,067
Linlithgow - -	120	- -	120	76,800	- -	76,800	3·968,516
Nairn - -	195	3	198	124,800	1,920	126,720	6·548,052
Peebles - -	319	- -	319	204,160	- -	204,160	10·549,640
Perth - - -	2,588	50	2,638	1,656,320	32,000	1,688,320	87·241,220
Renfrew - -	225	2	227	144,000	1,280	145,280	7·507,110
Ross, besides Islands - -	2,069	60	2,129	1,324,160	38,400	1,362,560	70·408,096
Roxburgh - -	715	½	715½	457,600	320	457,920	23·662,279
Selkirk - -	263	1½	264½	168,320	960	169,280	8·747,272
Stirling - -	489	13	502	312,960	8,320	321,280	16·601,627
Sutherland - -	1,754	47	1,801	1,122,560	30,080	1,152,640	59·560,818
Wigtown	451½	7½	459	288,960	4,800	293,760	15·179,575
Sums of these	25,520	494	26,014	16,332,800	316,160	16,648,960	860·308,221
Islands.							
Hebrides, viz.,							
Bute, &c. -	161	4	165	103,040	2,560	105,600	5·456,710
Isles of Argyle - -	929	21	950	594,560	13,440	608,000	31·417,422
Isles of Inverness - -	1,150	59	1,209	736,000	37,760	773,760	39·982,803
Isles of Ross & Cromarty	560	20	580	358,400	12,800	371,200	19·181,163
Orkney Isles -	425	15	440	272,000	9,600	281,600	14·551,227
Shetland Isles	855	25	880	547,200	16,000	563,200	29·102,454
Totals - -	29,600	638	30,238	18,944,000	408,320	19,352,320	1000·000,000

Face of the country.—As compared with England, the surface of Scotland is, speaking generally, sterile, rugged, and mountainous. To such a degree is this the case, that, estimating the whole extent of the country, exclusive of lakes, at 19,000,000 acres, it is doubtful whether so many as 6,000,000 be arable; whereas, taking the extent of England and Wales at 37,000,000 acres, the arable land certainly exceeds 29,000,000; so that while, in Scotland, the proportion of the cultivable to the entire land is less than one third, in England it exceeds three fourths. With the exception, indeed, of a few tracts of rich alluvial land (carses), Scotland has no extensive vales; the surface of the rest of the country being, even where most level, considerably varied with hill and dale. It should, however, be observed, that the general inequality of the surface makes the lower parts of the country appear to a stranger less fruitful than they really are; the hollows between the small eminences being often very fertile, and the eminences themselves, even where not susceptible of being ploughed, frequently furnish excellent pasture. This is particularly the case in the south-western counties; much of the best land in which, if surveyed from a distance, would appear, to one not acquainted with its capabilities, worth little or nothing.

Even the finest parts of the low country of Scotland usually want the rich luxuriance of an English landscape. Within the last sixty or seventy years a great deal has, no doubt, been done in the way of raising plantations; and the strictures of Dr. Johnson, as to the deficiency of wood, would at present be quite inapplicable, however just they may have been when dictated. In Scotland, however, plantations are not spread generally over the country, but are mostly congregated in the neighbourhood of gentlemen's seats, while in many large tracts they are wholly wanting. In most parts, too, we look in vain for those hedgerow trees that give so much of a woody appearance to the southern part of the island. Generally, also, the inclosures are a good deal larger than in England; and the fences being either stone walls (dykes) or hedges, that occupy only a small space of ground, having but little of the breadth and roughness of those of England, the country, however well farmed, seems to an Englishman deficient in vegetation and verdure, and cold and comfortless. On the other hand, however, the succession of new objects presented by the unevenness of the surface, the rude grandeur of the mountains that every where bound the prospect, and the striking contrast frequently afforded between rich, well cultivated, low grounds, and the contiguous high barren ridges, take from the Scottish landscape the tameness and monotony that prevail in many parts of England, and render it singularly picturesque and impressive.

Popularly, Scotland is divided into the Highlands and the Lowlands: the former comprising the most extensive, rugged, mountainous tracts, and the latter, the greater part of what may be considered as a comparatively flat country. The Highlands commence with the Mull of Cantire, and comprise the whole country to the north of the Frith of Clyde, as far as Dunbarton. From the latter their boundary may be traced by a waving line passing through Crieff, Dunkeld, and Brechin to Stonehaven or Aberdeen; so that they include the counties of Argyle, Inverness, Aberdeen, Banff, Elgin, Nairn, Ross, Cromarty, Sutherland, and Caithness, with parts of Dunbarton, Stirling, Perth, Forfar, and Kincardine. The level ground skirting the Moray Frith is sometimes excepted from the Highlands; but it is of comparatively limited extent; and, in popular language, the whole country north of the line already mentioned is usually understood by the term Highlands.

The Highlands are divided into two unequal portions by the long, low, narrow glen, called Glenmore, i. e. the *Great Glen*, stretching north-east and south-west across the island, from Inverness to Fort William. In its highest part, this remarkable glen is only 94 feet above the level of the sea. It consists principally of a chain of deep narrow lochs, or lakes; and these, being joined together, and made navigable from sea to sea, form the Caledonian Canal.

The northern division of the Highlands, though it does not contain the highest mountains, is decidedly the more barren and unproductive of the two. The good land is mostly restricted to the eastern parts of Ross and Cromarty. The western and northern coasts, and the interior, are, for the most part, in the last degree sterile, bleak, and unproductive; but the latter contains some pretty considerable straths, and innumerable glens, separated by high mountain ranges, and almost invariably possessing lakes and mountain tarns. There is a good deal of pretty level land in Caithness, but it is in great part moss and moor.

The Lowland division of the kingdom comprises, also, a great deal of mountainous country; but the mountains are not so high, nor, generally, so rugged as those of the Highlands, while the low country bears a far larger proportion to the hills.

SECT. 2.—*Mountains, Vales, &c.*

The mountains of the Highlands of Scotland consist either of detached groups, closely wedged together, or of ridges or chains, running for the most part in a north-east and south-west direction. They are, in many instances, extremely rocky and precipitous; but the greater number are covered with heath growing out of peat earth, rock, or gravel, few comparatively being clothed with green herbage. They are frequently separated from each other by deep narrow ravines, or glens. The *passes* into the country lie in these: hence they admit of being easily defended; and until recently, that roads have been carried through some of the principal ravines, they were impracticable almost to all but natives. To this, more than to any thing else, must be ascribed the successful resistance opposed by their inhabitants to the attacks of the Romans and the Saxons; and to it, also, is it owing that the Highlanders are to this day a distinct people, differing essentially in language, dress, and manners from the Lowlanders.

Of the Highland mountains, the Grampian chain, mentioned by Tacitus (*Agricolæ Vit.* cap. 29.), is at once the best known and the most celebrated. Its limits are not very well defined; but it may be regarded as commencing on the east side of Loch Etive, in Argyleshire, and as stretching across the island, till it terminates between Stonehaven and the mouth of the Dee on the eastern coast. It forms, as it were, a natural rampart, bounding the entire frontier of the Highlands. Its southern acclivity rises from the great valley of Strathmore. The summit of the ridge marks the line that separates the waters that flow into the Forth, the Tay, and its numerous tributaries, and the South Esk, from those that flow into the Spean, the Spey, and the Dee. With the exception of Ben Nevis, the highest mountains of Scotland are comprised in the Grampian range. The principal summits, beginning at the west and proceeding eastwards, are Cruachan Ben, at the head of Loch Awe, 3,390 feet above the level of the sea; Ben Lomond, on the east side of Loch Lomond, 3,195 do.; Ben More, at the head of Glendochart, 3,870 (B) do.; Ben Lawers, on the north side of Loch Tay, 3,945 do.; Schiehallion, near the east end of Loch Rannoch, 3,550 do. But the most elevated part of the Grampian chain lies at the head of the Dee, between Ben Gloe, in Perthshire, and Cairngorm, on the confines of Aberdeenshire and Inverness-shire. Ben Macdhu, the most elevated of the mountains in this vicinity, is 4,327 feet high, being only 43 feet lower than Ben Nevis; and the adjoining mountains of Cairngorm, Cairntoul, and Ben Avon are respectively 4,095, 4,245, and 3,967 feet high. From this central point, the principal branch of the Grampians runs along the southern side of the Dee, gradually declining in height till it reaches Gaerloch Hill, near Stonehaven, 1,890 feet high. The coast from Stonehaven to the Dee is high and precipitous, and may be considered as the extreme limit of the Grampians on the east. The branch of the Grampians to the north of the Dee is of comparatively small extent, terminating at the Buck, above Glenbucket, on the north, and near Tarland, on the south.

The Grampians are, in general, remarkable for their sterility, and the desolate aspect which they present. Their sides are in some places extremely precipitous, exhibiting vast perpendicular ledges of rock. Their summits are frequently rounded, sometimes nearly flat, entirely covered by disintegrating blocks and stone, together with grit and sand, except where the granite rocks present the singular appearance of large tabular protruding pinnacles, having their blocks seemingly arranged in regular strata.

Of the Grampian passes, the principal are those of Aberfoyle, Leni, Glenshie, and Killiecrankie. The latter, which is the most celebrated, is about 15 miles from Dunkeld. It is about half a mile in length. The road is cut out of the side of one of the contiguous mountains; and below it, at the foot of a high precipice, in the bottom of the ravine, the river Garry dashes along over rugged rocks, but so shaded with trees as hardly to be seen. At the northern extremity of this pass, the revolutionary army, under Mackay, was defeated in 1689, by the troops of James II., under the famous Graham of Claverhouse, Viscount Dundee, who fell in the moment of victory.

Ben Nevis, the highest of the British mountains, lies immediately to the east of Fort William, being separated from the Grampians by the desolate tract called the Moor of Rannoch. It rises 4,370 feet above the level of the sea: being 43 feet higher than Ben Macdhu, the next highest mountain in Scotland, and 799 feet higher than Snowdon, the most elevated of the Welsh mountains. Its circumference at the base is supposed to exceed 24 miles. Its outline all round is well defined. Its nothern front consists of two grand distinct ascents or terraces; the level top of the lowest of which, at an elevation of about 1,700 feet, contains a wild *tarn*, or mountain lake. "The outer acclivities of this, the lower part of the mountain, are very steep, though covered with a short grassy sward intermixed with heath; but at the lake this general vegetable clothing ceases. The surface of the upper and higher part of the mountain, where not absolutely precipitous, is strewed with angular fragments of stone of various sizes, wedged together, and forming a singularly rugged covering, among which we look in vain for any symptom of vegetable life. On the north-east side, a broad, terrific, and tremendous precipice, commencing at the summit, reaches down to a depth of not less than 1,500 feet. The furrows and chasms in the black beetling rocks of this precipice are constantly filled with snow, and the brow of the mountain is also encircled with an icy diadem. From the summit the view is remarkably grand and sublime." It commands most of the western islands, from the Paps of Jura to Cuchullin in Skye; and on the east the view extends to Schiehallion, Cairngorm, and Ben Macdhu. — (*Anderson's Guide to the Highlands, &c. of Scotland,* p. 266. &c.)

The Monagh Lea mountains run nearly parallel to and along the western side of the Spey, from its source to Dollas on the Lossie, a distance of about 56 miles. The summit of this ridge divides the waters that flow into the Spey, on the one hand, from those that flow into the Findhorn on the other. The mountains comprised in this chain, though wild, are tame, and do not attain to any very considerable elevation. "They rise in long ridges from an elevated base of dark heathy moor, and they possess but little of the abrupt serrated aspect of the west coast hills; their outlines being less decided, and their acclivities less broken. Extensive straths or pastoral valleys, abounding in streams and herbage, lie embosomed among the mountains, and support great herds of black cattle, for which the district has long been celebrated; while the adjoining solitudes, which are wide, and rarely visited by the foot of man, continue still to be the retreats of great numbers of roe and red deer, and of grouse and ptarmigan. A scattered, but hardy, and very ancient race of people occupy the straths of this district, whose almost exclusive occupation is that of shepherds or drovers." — (*Anderson's Highlands, &c.* p. 125.)

The western and central parts of the Highlands, from Ben Nevis north to Cape Wrath and Strathy Head, are almost every where sterile, dreary, and mountainous. This is particularly the case with the country from Loch Lochy and Loch Arkeg north to Loch Broom. The mountains in this district are lofty; Ben Attow attaining to an elevation of nearly 4,000 feet, and some of the others being but little inferior.* The glens along the waters run generally east and west, and are very narrow and contracted; and the country is so impracticable that it cannot be traversed except by following the course of the streams. It is mostly appropriated to sheep-farming and the rearing of cattle, and is very thinly inhabited — not a house being sometimes visible in the course of many miles. The sides of the mountains are generally abrupt and precipitous: their peaks are occasionally sharp and rugged; but those along the coast have, on the whole, more verdure, and a less heathy and barren aspect, than those that are more inland. The mountains round Loch Maree are, however, as barren, lonely, and terrific as can well be imagined.

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* *Brewster's Encyclopædia,* article *Scotland,* p. 614.

From Loch Broom north to Cape Wrath, along the coast, there are no very high hills; but the country to a considerable distance inland is elevated about 1,000 feet above the level of the sea, and is peculiarly rocky, barren, and savage. Ben More, in Assynt, on the eastern verge of this worthless tract, is 3,231 feet in height.

Of the central Highland mountains, to the north of the Caledonian canal, the most conspicuous are Mealfourvony, contiguous to Loch Ness, 2,730 feet above the level of the sea: Ben Wyvis, north-west from Dingwall, is 3,426 feet high; and, though not the highest, is, from its enormous lateral bulk, and extensive ramifications, the principal mountain in this part of the island: Ben Derag, at the head of Loch Broom, is 3,551 feet above the level of the sea; Ben Hee, in Sutherland, east of Loch More, 2,835 do.; and Ben Clibrick, to the south of Loch Naver, in the same county, 3,165 do. Morven, in Caithness, has an altitude of 2,334 feet. The glens and valleys among the mountains are partly cultivated, and partly depastured by black cattle; the higher levels, and the mountains themselves, when not entirely barren, being mostly depastured by sheep.

The mountains of the southern Lowlands, or of that part of Scotland lying to the south of the Friths of Forth and Clyde, cover all the central part of the country; sending, in some places, ridges to the coast. They may be regarded as commencing with the Cheviot Hills, on the borders of Northumberland, stretching thence across the island to Loch Ryan. They occupy the southern parts of Roxburghshire, the northern parts of Dumfriesshire, the principal part of Selkirkshire and Peeblesshire, the extreme southern part of Mid Lothian, the southern part of Lanarkshire, the south and east parts of Ayrshire, and the north and west parts of Kirkcudbrightshire. A branch, denominated the Soutra and Lammermoor Hills, diverges from the central mass on the confines of Mid Lothian and Selkirkshire, terminating at St. Abb's Head and Fast Castle on the eastern coast.

The highest of the southern mountains lie contiguous, in the central part of the country, on the confines of the counties of Dumfries, Peebles, Lanark, and Selkirk. Broadlaw, in the parish of Tweedsmuir, 12 or 14 miles from Moffat, the most elevated mountain in the south of Scotland, is 2,741 feet above the level of the sea: Hartfell, contiguous to Broadlaw, formerly supposed to be the highest summit in this quarter, has an altitude of 2,635 feet; and several of the surrounding summits rise to the height of about 2,000 feet. The great rivers Tweed, Clyde, and Annan, flowing east, north-west, and south, rise, near each other, on the skirts of Hartfell, or of the immediately adjoining hills. The next highest points in the southern mountains are Whitecomb, in Dumfriesshire, 2,685 feet high; Cairnsmuir of Carsphairn, and Cairnsmoor of Fleet, in Kirkcudbrightshire, respectively, 2,597 and 2,329 do.; Lowther Hill, Dumfriesshire, 2,396 do.; Queensberry Hill, do., 2,259 do.; Dunrich Hill, Roxburghshire, 2,421; &c.

The mountains in the counties of Roxburgh, Peebles, Selkirk, and Dumfries have, for the most part, smooth sides, with flat rounded summits. They are seldom heathy; but are mostly well covered with grass and other herbage, affording excellent pasture for immense flocks of sheep. The mountains of Kirkcudbright and Ayrshire are more rugged and heathy; but they generally want the bold precipitous character of the Highland mountains.

Exclusive of the great mass of southern mountains now alluded to, there is in the Lowlands a remarkable chain of hills running parallel to, and at no great distance from, the Grampians, across the island. But this chain has not, like the Grampians, one general appellation; and it is divided by the valleys of the Tay and the Forth into three distinct portions. Its direction and bearing cannot, however, be mistaken. From Montrose to Perth, where it is intersected by the Tay, this chain is called the Sidlaw Hills; thence to the valley of the Forth it is called the Ochill Hills; and, reappearing again in Stirlingshire, it is prolonged to Dunbarton, by the names of the Dundaff, Fintry, and Campsie Hills. The low country, or valley, between this range of hills and the Grampians is called, by way of distinction, Strathmore, i. e. the Great Valley; and, except where it is crossed by a low ridge joining the Grampians and Ochills, between Muthill and Dunblane, and by another separating Loch Lomond from the valley of the Forth, it is said not to be in any part much more than 200 feet above the level of the sea. The summit of Ben Clach, the highest of the Ochill hills, is 2,359 feet above this level.

Of the detached mountains of the Lowlands, those most worthy of attention seem to be the Lomond hills in Fife, and the Pentland hills in Mid Lothian. Criffel, a detached rugged mountain on the Solway Frith, rises 1,831 feet above the level of the sea.

Some of the Western Islands are mountainous, but, except in a few instances, the summits do not attain to any very great elevation. Ben More, in Mull, rises 3,168 feet above the level of the sea. The altitude of the Cuchullin hills, in Sky, is but little inferior. Goatfell, Arran, is 2,865, and the Paps of Jura are respectively 2,470 and 2,359 feet above the level of the sea.

Undoubtedly, however, the Rock of Ailsa is at once the most unique and remarkable of the insular eminences. It is situated in the Frith of Clyde, about 10 miles west from Girvan. It has an elliptical base 3,300 by 2,200 feet; and rises abruptly from the sea to the height of 1,098 feet. It consists of columnar trap. The north-west side is almost perpendicular; being formed of successive tiers of columns of vast magnitude, both as to length and diameter. Ailsa affords shelter to innumerable flocks of sea-fowl; and is a very striking object from almost every part of the Ayrshire coast.

Altitudes of some of the principal Hills and Mountains of Scotland, mostly derived from the Ordnance Survey.

Ailsa, Frith of Clyde	1,098
Arthur's Seat, Edinburghshire	822
Bannoch, Forfarshire	3,377
Battock Hill, Kincardineshire	2,611
Ben Achonzie, Perthshire	3,028
Ben Attow, Inverness-shire	4,000
Ben Avon, Aberdeenshire	3,967
Ben Clach, highest summit of the Ochills	2,359
Ben Clibbrick, Sutherland	3,165
Ben Derag	3,551
Ben Gloe, Perthshire	3,690
Ben Hec, Sutherland	2,853
Ben Lawers, Perthshire	3,945
Ben Ledi	2,863
Ben Lomond, Stirlingshire	3,195
Ben Macdhu, Aberdeenshire	4,327
Ben More, Perthshire	3,870
Ben More, Assynt, Sutherland	3,231
Ben More, Island of Mull	3,168
Ben Uarn, Aberdeenshire	3,589
Ben Nevis, Inverness-shire	4,370
Ben Ormen, Sutherland	2,307
Ben Voerlich, Perthshire	3,180
Ben Wyvis, Ross-shire	3,720
Black Larg, Kirkeudbright	1,950
Black Hoe Hills, Selkirkshire	2,370
Broadlaw, Peeblesshire	2,741
Cairneelar, Inverness-shire	3,350
Cairngorm, Inverness-shire	4,095
Cairntoul, Aberdeenshire	4,245
Cairnsmoor of Fleet, Kirkcudbrightshire	2,329
Cairnsmoor of Carsphairn	2,597
Calton Hill, Edinburgh city	356
Carnethy, highest point of Pentland Ridge, Edinburghshire	1,880
Criffel, Kirkcudbright	1,830
Cruachan Ben, Argyleshire	3,670
Cuchullin, Isle of Skye	2,995
Dunrich Hill, Roxburghshire	2,421
Ettrick Pen, Dumfriesshire	2,258
Gaerloch, Kincardineshire	1,890
Goatfell, Isle of Arran	2,865
Hartfell, Dumfriesshire	2,635
Lochnagar, Aberdeenshire	3,777
Lomond Hill, Fifeshire	1,709
Lowther Hills, Dumfriesshire	2,396
Mealfourvony, Inverness-shire	2,730
Morven, Caithness	2,334
Paps of Jura, Island of Jura	2,470 & 2,359
Queensberry Hill, Dumfriesshire	2,259
Scarscoch, Aberdeenshire	3,402
Schiehallion, Perthshire	3,550
Soutra Hill, Haddingtonshire	1,716
Tintoc, Lanarkshire	2,306
Whitecomb, Dumfriesshire	2,685
Wisp Hill, Roxburghshire	1,830

Vales.— As already observed, the level tracts of Scotland are but few, and limited in extent, as compared with those of England. The most important are the low alluvial lands (*carses*) on the banks of the Forth and Tay, with the Merse of Berwickshire, and that part of Strathmore that lies in Angus and East Perthshire. The first, usually called the Carse of Stirling and Falkirk, occupies the country on both sides the Forth, from Borrowstonness on the south, and Kincardine on the north, westward to Gartmore, having attached to it the level lands on the Teith and the Allan. The towns of Stirling, Alloa, and Doune are in this level. The first is a very striking object: the rock on which the castle and town are built rising on the west and north sides almost perpendicularly from the plain, and declining rapidly to the east and south. The soil of the carse is eminently fertile; producing the most luxuriant crops of wheat, beans, &c. The view from the ramparts of Stirling Castle is particularly grand.

The level lands on the Tay, and its tributary the Earn, are of very considerable extent; and that portion denominated the Carse of Gowrie, being the tract between Dundee and Perth, bounded by the Sidlaw hills on the north, and the Tay on the south, is decidedly the richest and finest country in Scotland; and is not, in fact, inferior to any in the empire. Strathearn, or the low ground on each side the Earn, from Crieff to Rhind Point, where it unites with the Tay, consists in most places of rich alluvial land of great fertility, though in this respect it is surpassed by the Carse of Gowrie.

The view from the hill of Kinnoul, immediately to the east of Perth, is most striking. The valleys of the Tay and Earn are also seen to great advantage from several points of the Ochill hills. The view not only embraces a large expanse of this rich and highly cultivated valley, with the course and confluence of its noble rivers, but commands, in the distance, the Grampian range. Hence it may readily be conceived to be, if not superior, certainly not inferior, in point of variety, extent, and magnificence, to any other in the empire.

The Merse of Berwickshire extends from the Leader Water along the Tweed to Berwick, occupying most of the low and generally level part of the county, or nearly half its surface, having within it the towns of Greenlaw, Dunse, and Coldstream. The soil of the Merse is loamy, and generally excellent; and its farming is not surpassed by any to be met with anywhere else.

By Strathmore, in its more confined sense, is meant the low country in Angus and Perthshire, stretching from Laurencekirk in the former to Methven in the latter. This, however, includes part of the valley of the Tay, already noticed. That part of Strathmore that lies in Angus is not generally flat, but has its surface diversified by gentle eminences: it is of various degrees of fertility; portions of it remaining waste and uncultivated. It wants, indeed, some of those characteristics, that are, in England, understood to be inseparable from vale land.

Besides the above, there are several smaller straths. Of these the most important and valuable seem to be Teviotdale, or the low country along the Teviot, in Roxburghshire; Tynedale, or the low rich country along the Tyne, in East Lothian; and the *How of Fife*, or the low rich land along the Eden, in Fifeshire. The surface of these straths is gently varied: they consist, for the most part, of a loamy soil, and are in a high state of cultivation.

Moors. — It would be useless to attempt particularising the Scottish moors: they are too frequent and extensive, in most parts of the country, to require, or, indeed, to admit of specification. The moor of Rannoch, lying between Schiehallion, Cruachan Ben, and Ben Nevis, seems, however, to be entitled to some notice. It includes a vast extent of rocks, lakes, and morasses, elevated about 1,000 feet above the level of the sea; and is one of the most dreary, wild, and worthless districts imaginable. It is not inhabited, and is seldom even visited. There is a somewhat similar tract on the west coast of Cromarty and Sutherland, stretching from the southernmost point of the former to Loch Inchard in the latter, about 10 miles inland. Though without any great hills, and not very elevated, it is extremely rugged, bleak, and miserable. The soil of most of the Scottish moors, as well as many of the mountains, is peat, which, being impregnateb witn water, is supposed to exert a very unfavourable influence over the climate.

SECT. 3. *Rivers and River Ports.* — *Lakes, &c.*

Rivers and River Ports. — The rivers of Scotland, having their sources and channels in a more mountainous, rugged,[1] country, differ materially in character from the English rivers; being in general purer, more rapid, more interrupted by rocks and cataracts, and more liable to sudden overflowings. Owing, also, to the greater altitude whence they descend, and the comparatively limited extent of level ground through which they flow, they are not nearly so available for the purposes of navigation as the rivers of England. With the exception of the Clyde, they almost all run east, north, or south, but principally east. There is not, indeed, on the whole western coast of Scotland, from Cantire northwards to Cape Wrath, the embouchure of a single considerable river.

Tweed, &c. — The Tweed, during the latter part of its course, forms the boundary between Scotland and England; but, as its sources and principal tributaries are all in the former, it is properly considered a Scotch river. It rises on the east side of Errickstane Hill, about 6 miles from Moffat. Its course is first north-east, to Peebles; then east, with a little inclination to the south, to Melrose; it next passes Coldstream and Kelso; and, pursuing a north-easterly direction, falls into the sea at Berwick. The descent from the source of the Tweed to Peebles is 1,000 feet, and thence to Berwick about 500 feet more. — (*New Statistical Account of Scotland*, p. 2.) The waters of the Tweed are particularly pure and limpid. The first part of its course is through a fine pastoral county; and the latter through one that is rich and well cultivated. Including windings, its length is reckoned at rather more than 100 miles. Notwithstanding it conveys a large body of water to the sea, it is not navigable for any considerable distance. The salmon fisheries on the Tweed are of great importance: in this respect, indeed, it is second only to the Tay.

Among the principal tributaries of the Tweed is the Etterick, which, flowing from the southern parts of Selkirkshire, joins it at the Eildon Hills. A little lower down it receives the Gala, from Edinburghshire, and the Leader, from the borders of East Lothian. The Teviot rises in Roxburghshire, on the confines of Dumfriesshire; and, flowing north-east, and receiving several tributaries, it falls into the Tweed at Kelso. The Till rises in Northumberland, near Ingram, and, pursuing a north-westerly course, falls into the Tweed at Tilmouth. Near Berwick the Tweed receives the Adder, a considerable river, composed of the united streams of the Blackadder and Whiteadder, having their sources in the Lammermoor hills. The basin of the Tweed is estimated at about 1,870 square miles.

Berwick, so celebrated in border history, lies on the north side of the Tweed, close to its mouth. It has a pier, with a light-house at its head. At low spring ebbs there are not more than 5 or 6 feet water on the bar; but at high water it has from 3 to 3½ and 4 fathoms. The channel does not exceed a cable's length across; and is difficult to take in stormy weather, or when there is much fresh water in the river.

Forth, &c.—Proceeding northwards along the coast, we meet with the great arm of the sea, extending westwards from the Isle of May to Kincardine. This, which is the *Bodotria* of Tacitus, is now called the Frith or æstuary of the Forth, from its receiving, at its remotest extremity, the river of that name. The Forth has sometimes been reckoned the chief of the Scotch rivers; but, in point of of magnitude, it is decidedly inferior to the Tay. It originates in several mountain streams that rise on the east side of Ben Lomond. Its course is easterly, with many sinuosities, by Aberfoyle, Stirling, and Alloa, till it unites with the Frith of Forth at Kincardine. Its most important tributary, the Teith, has its sources a little more to the north, and is the channel by which Lochs Katherine, Venacher, Voil, Lubnich, &c., are drained of their surplus water. It pursues a south-easterly course past Callendar and Doune, bringing to the Forth, a short way above Stirling, a volume of water greater than its own. The Forth is joined, somewhat lower down, by the Allan, flowing south from Perthshire, and the Devon, flowing west from Kinross-shire. Except near its source the Forth is by no means a rapid river. For the greater part of its course, it flows, with many windings, through a flat, low, rich country. The distance, in a direct line, from the source of the Forth to Kincardine, is only about 35 miles; but by water it is about three times that distance. It is navigable for vessels of 70 tons as far as Stirling; but its course below the latter is so very tortuous, that, though the distance from Stirling to Alloa, by the road, be only about 7 miles, it is more than 23 by water. Hence it is little navigated in this part of its course, except by steam-vessels. Ships of 300 tons burden ascend the Forth to Alloa, which may be regarded as its principal port. There is good and secure anchoring ground in the channel of the river, or rather bay, between Grangemouth and Queensferry. The Forth and its tributaries are supposed to drain about 800 square miles. There are valuable salmon fisheries near Stirling, and in several other parts of the river. The great canal, joining the Forth and Clyde, commences at Grangemouth, on the Frith of Forth, near the mouth of Carron Water.

Tay, &c. — The Tay is the greatest of the Scotch, and, in respect of the quantity of water it conveys to the sea, it is the greatest even of the British, rivers. It rises in the high mountainous country a little to the north of Loch Lomond; and, flowing north-east by Killin, expands into the beautiful long narrow lake called Loch Tay. Issuing thence, its course is north and east to Logierait; south to Dunkeld; east to Kinclaven; south, inclining a little to the west, to Perth; north-east to the point of Rhind; then, north-easterly, past Dundee, till it falls into the sea between Tentsmoor Point and Buttonness. From Rhind Point to Dundee the channel of the river expands into an æstuary called the Frith of Tay. From its source to Dunkeld the Tay flows with a rapid current, partly through a very wild, and partly through a highly picturesque, romantic, country. Its subsequent course, as far as Perth, is through a comparatively

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fruitful country; and, from the latter to the sea, it flows through the richest and finest valley in Scotland.

From Buttonness to Dundee the river is navigable for ships of 500 tons burden; and, at high water, vessels of above 100 tons burden reach Perth, 20 miles above Dundee. Two light-houses have been erected on Buttonness to mark the entrance to the river. The bar at its mouth has 2½ fathoms water over it. Dundee, the port of the Tay, is a large, rapidly improving, and highly important manufacturing and commercial town. It has wet docks and a pier harbour. The latter dries at low ebb; but at high water springs it has a depth of 14 or 15 feet, and at neaps of 9 or 10 feet. Large ships anchor in the channel of the river. The mouth and channel of the Tay are a good deal incumbered with sand-banks; and its navigation it rather difficult, partly on that account, and partly from the strength of the tides. — (*Norie's Sailing Directions for the North Sea*, p. 106.)

Among the more remarkable of the tributaries of the Tay may be mentioned the Lyon, which joins it near Fortingal. The Tummel has its sources in the moor of Rannoch, and, flowing through the loch of that name, is joined near the pass of Killiecrankie by the Gary, from the confines of Loch Ericht. The united river falls into the Tay at Logierait. Near Kinclaven, the Tay receives the united waters of the Airdle, the Isla, and other rivers flowing south from the mountains on the confines of Aberdeenshire. At Rhind Point it receives its important tributary the Earn, flowing eastward from Loch Earn. The basin of the Tay comprises a space of about 2,400 square miles; and Mr. Smeaton ascertained that it carries to the sea more water than even the Thames. Its course from its source to Buttonness is estimated at about 110 miles. It is the finest salmon river in Great Britain: its fisheries let for a large sum; the fish being mostly conveyed, packed in ice, to London.

South and North Esks. — These rivers rise in the Grampian mountains, on the confines of Aberdeenshire, and, flowing south-east, fall, the first into the sea, a little below Montrose, and the latter about 4 miles more to the north.

Montrose is situated on the north side of the river, about 1½ miles from its mouth. Two light-houses have been erected on its extreme north-east boundary. The channel is narrow; but there are 15 or 18 feet water on the bar at low ebbs, so that middling-sized ships may run in at any time of the tide. The basin of Montrose, above the town, has a fine appearance on a map; but it is too shallow to be of any use. Notwithstanding the recent improvements, the narrowness of the channel, and the rapidity of the tides, make it advisable for ships entering Montrose to employ a pilot.

Dee. — This river has its sources in the highest part of the Grampian mountains, at the point where the south-western extremity of Aberdeenshire unites with Inverness-shire. It flows east, by the castle-town of Braemar, Glengairn, and Durris, till it falls into the sea, on the south side of New Aberdeen. It receives many tributaries, but none of very material importance. The total length of the Dee, from its source to its mouth, following its various windings, is between 80 and 81 miles; but a straight line, drawn between the two extremes, would not exceed 65 miles. For the first 10 miles of its course there is no human habitation near the banks of the Dee. It is distinguished by its rapidity, its broad and capacious channel, and the limpid clearness of its waters. It is not navigable, in ordinary tides, for more than a mile from its mouth. It is well stocked with salmon, trout, and eels, and the fisheries of the first are valuable. There is but little alluvial land along its banks; but they are extremely well fitted, particularly in the upper districts, for the growth of timber. The Dee and its tributaries drain about 900 square miles of country.

Great efforts have been made, by the construction of massive and lengthened piers, and otherwise, to improve the harbour of Aberdeen: it is still, however, but indifferent. At low ebb the bar at the mouth of the river has about 12 feet of water.

Don. — This, the second of the Aberdeenshire rivers, rises on the skirts of Ben Avon, on the confines of Aberdeenshire and Banffshire, flowing in a circular curve by Towie, Monymusk, and Kintore, till it falls into the sea, on the north side of Old Aberdeen. Its total course, following its windings, is about 61 miles; and a straight line, drawn from its source to its mouth, would be about 42 miles. It is a much less rapid river than the Dee, and flows, for a considerable part of its course, through rich valleys. A canal, about 19 miles in length, and 3 feet 9 inches deep, runs along the southern side of the Don, from Aberdeen to Inverury. It is used principally to bring down granite for shipment at Aberdeen. There are salmon fisheries on the Don, but not so valuable as those on the Dee.

Spey. — Proceeding northwards, we meet with no river of sufficient magnitude to require any notice here, till, passing Kinnaird Head, and turning to the west, we fall in with the Spey. This important river has its source in Loch Spey, within about half-a-dozen miles of the head of Loch Lochy. It pursues a north-easterly course through Badenoch and Strathspey to Fochabers, below which it falls into the great arm of the sea called the Moray Frith. It receives innumerable mountain streams, but no very important tributary. Following its windings, the course of the Spey is about 96 miles; but it is only about 75 miles, in a direct line, from its source to its mouth. It drains above 1,300 square miles of country; and, besides being one of the largest, is admitted to be the most rapid, of the Scotch rivers. Being fed wholly by mountain torrents, it is very liable to sudden and destructive inundations. It flows through what is the best wooded portion of the Highlands. The Duke of Richmond is proprietor of several valuable salmon fisheries on this river.

Findhorn. — This river has its sources in the Monaghlea mountains, 8 or 10 miles west from Kingusie on the Spey. It pursues a north-easterly course, falling into the Moray Frith at the village of Findhorn. Including its windings, its course is altogether about 56 miles; and it drains about 400 square miles of surface. The scenery along its banks is celebrated for its beauty and variety. It is more liable than the Spey or any other river in Scotland to sudden and dangerous floods. One of the greatest of those, of which we have any authentic account, occurred in August, 1829. In some parts of its course the water rose no less than 50 feet in perpendicular height above its ordinary level; sweeping before it trees, mill-dams, bridges, and even vast masses of rock! It is singular that, notwithstanding the rise was as sudden as it was extraordinary, and that a great extent of country was laid under water, only eight lives are supposed to have been lost. — (*Anderson's Account of the Highlands*, p. 143. &c.) The *Nairn* has its embouchure about 10 miles more to the west than the Findhorn: the *Ness* issues from Loch Ness, and, after a short course, falls into the sea at Inverness: the *Beauley* falls into the Beauley Frith; and the *Conon* into the Frith of Cromarty. These are the most considerable rivers falling into the sea in the Moray Frith; but none of them is navigable to any distance, or seems to require any special notice. The rivers of Sutherland and Caithness are all in the same predicament: and we have already stated that there is nothing deserving the name of a river on the whole western coast, from Cape Wrath to the Clyde.

Clyde, &c. — This fine river, the *Glotta* of Tacitus, decidedly the most important, in a commercial point of view, of any in Scotland, rises, as already remarked, in the highest part of the southern mountain land, at no great distance from the sources of the Tweed and the Annan. At first its course is northwards, inclining a little to the east, through Crawford Moor, till, near Cairstairs House, it turns suddenly to the south-west; but, being joined by the Douglas, near Harperfield, it takes a north-west course, by Lanark, Hamilton, and Glasgow, falling into the Frith of Clyde below Dunbarton. From its source to Dunbarton, the distance, in a direct line, is about 52 miles; but, following its windings, the length of the river is about 73 miles. Its basin comprises about 1,200 square miles, comprising the principal manufacturing district of Scotland, with the city of Glasgow, and the towns of Paisley, Greenock, Hamilton, Lanark, Pollockshaws, &c. Its principal tributaries are the Douglas, Nethan, Aven, Mouse, Kelvin, Cart, and Leven.

Immediately after the junction of the Douglas with the Clyde, a little above Lanark, the river begins to be precipitated over a succession of falls or cataracts. The first considerable fall is that of Bonnington; its height, including that of a little one immediately above it, being about 30 feet. The second fall is that of Corehouse, where the water dashes from one ledge of shelving rock to another; its perpendicular height being about 70 feet. Dundaff Fall is 10 feet high; and there are three distinct falls at Stonebyres, below Lanark, making together about 76 feet. The distance from the highest to the lowest fall is about 6 miles; and, throughout the whole of this part of its course, the river dashes along with the impetuosity of a mountain torrent, and is deeply ingulfed between rocky banks.* At the lowermost fall it resumes its former quiet character: the valley on both sides gradually widens; and it pursues its course through a comparatively well cultivated, rich, and populous country, intersecting the great and flourishing city of Glasgow; about 7 or 8 miles below which it begins to expand into an æstuary.

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* *Naismith's Survey of Clydesdale*, pp. 19, 20, &c.

The Clyde is navigable at high water as far as Glasgow. Formerly the navigation was much obstructed; and a great deal of money and labour have been expended in efforts to improve and deepen the channel. These have been so far successful, that vessels of 300 tons or upwards are at present able to get up to the city. Still, however, the navigation is far from being in a very desirable state; and it has been proposed to cut a ship canal from Port Glasgow to the city. It were better, perhaps, had this been done long ago; but the expediency of the measure becomes more doubtful now that so great an outlay has been made on the river. It is seldom, however, that attempts to deepen the bed of rivers have the wished-for success. In general, their navigation is liable to frequent interruptions from tides, floods, droughts, &c. The success that has attended the cutting of the Gloucester Canal, from Berkeley to Gloucester, is pretty decisive as to the superiority of such a channel, as compared with that of even a moderately good river. If attempted, the Glasgow Canal ought to be of sufficient magnitude to admit ships from the West Indies and America; that is, ships of 350 or 400 tons burden.

The great canal, joining the Forth and Clyde, falls into the latter at Dunglass, a little above Dunbarton. A branch of the canal is carried to Port Dundass, on the north side of the city of Glasgow.

Dee, Nith, and Annan. — Of the southern rivers these are the only ones that seem to require notice. They flow south, with a little inclination to the east, and fall into the Solway Frith. The Dee has its sources in the most northerly part of Kirkcudbrightshire, amongst the mountains, on the confines of Ayrshire. Below New Galloway it expands into the long and beautiful sheet of water called Loch Ken. Issuing thence, it flows south past Kirkcudbright, uniting with the Solway Frith at the Ross, about 6 miles below that town The Dee is a fine river, and may be navigated by large vessels to Tongland Bridge, about 2 miles above Kirkcudbright. The Nith is the largest of the southern rivers. Its sources are in the northern parts of Dumfriesshire, some of them being contiguous to those of the Clyde. Pursuing a south-easterly course through Nithsdale, and passing Dumfries, it falls into the Solway Frith, about 7 miles below the latter. It is navigable to within a couple of miles of Dumfries for vessels of considerable burden; but the navigation is a good deal impeded by sand-banks. The course of the Annan is nearly parallel to that of the Nith. It rises on the south side of Hartfell, near Moffat, and falls into the Solway Frith, a little below Annan.

Lakes. — Exclusive of the many narrow inlets or arms of the sea, that indent its west coast, Scotland has to boast a vast number of freshwater lakes, or lochs, particularly in the Highlands. Of the Lowland lakes, Loch Leven, in Kinross-shire, seems to be the only one requiring a distinct notice. Not long since it was about 4 miles in length by about 2½ in breadth; but it has recently been diminished by drainage. It is a beautiful sheet of water, having the Lomond hills on its east, and Benarty Hill on its south side, with the towns of Kinross and Milnathort on its western margin. But it derives its principal celebrity from having within it a little island, on which are

Table exhibiting the Dimensions, Situation, and leading Characteristics of the principal Scottish Lakes.

	Names.	Length in Miles.	Greatest Breadth in Miles.	Square Miles of Surface.	Counties in which they are situated.	Characteristics.
1.	Loch Lomond -	24	7	45	Dunbarton and Stirling	Full of wood-clothed islands, partly surrounded with mountains,and abounding in fish.
2.	Awe - -	25	2½	30	Argyle - - - -	Ditto, ditto, amid beautiful mountain scenery.
3.	Ness - -	22	2½	30	Inverness - -	Surrounded with mountains, full of fish, and in the tract of the Caledonian Canal.
4.	Shin - -	20	1½	25	Sutherland - -	Surrounded with wild mountain scenery, and abounds in fish.
5.	Maree - -	12	3	24	Ross, west coast - -	Abounds in fish, full of islands, many of them wooded.
6.	Tay - -	15	2	20	Perth - - -	Full of fish, and in the heart of a beautiful Highland country.
7.	Arkeg - -	12	2	18	Inverness - -	Abounds in fish, and in the heart of a fine rural Highland country.
8.	Shiel - -	16	1	16	Inverness, west coast -	Abounds in fish, and in the heart of a mountainous country.
9.	Lochy - -	16	1	15	Inverness - -	In the tract of the Caledonian Canal, fine salmon, and clear hard water.
10.	Laggan -	8	1½	12	Inverness - -	Abounds in fish, and in the heart of a wild Highland country.
11.	Morrer -	9	2	12	Inverness - -	Abounds in fish, in the heart of a rural Highland country.
12.	Eannich -	7	1½	10	Ross, in the middle -	In a remote part of the country, surrounded by lofty mountains.
13.	Ericht - -	14	2	10	Perth and Inverness -	In a wild mountainous country, fringed with wood, remote from habitation.
14.	Earn - -	8	1¼	9	Perth - -	In a pleasant Highland country, with much natural wood.
15.	Naver - -	6	2	9	Sutherland - -	In a remote and mountainous country.
16.	Stennis - -	8	2	8	Orkney, mainland -	Full of fish, much haunted by sea-fowl, and in the midst of a low and barren country.
17.	Rannoch -	9	1	8	Perth - -	Full of fish, and in the heart of a woodland Highland country.
18.	Leven - -	4	2	7	Kinross - -	Full of fish, has an island with a castle, and in the heart of a cultivated country.
19.	Fuir - -	4	2	6	Ross - - -	In a wild mountainous country.
20.	Lydoch -	6	1	6	Perth and Argyle -	In a wild country, remote from habitation.
21.	Dee and Ken	10	0¾	6	Galloway - - -	Abounds in fish, and in the heart of a cultivated country.
22.	Loyal - -	6	1	6	Sutherland - -	In a mountainous country, near the north coast.
23.	Glass - -	5	1	5	Ross, east - -	Abounds in trout, in the midst of a hilly country.
24.	Katterin -	8	0¾	5	Perth, Monteith - -	Abounds in uncommon picturesque scenery, wild and gloomy.
25.	Doon - -	9	1	4½	Ayrshire - -	Encircled with a rocky shore, and abounds in trout.
26.	Huichart -	3	1	3	Ross - - -	In a mountainous country, the precipitous shores covered with wood.

the ruins of the castle wherein Queen Mary was confined previously to the battle of Langside. This lake has a peculiar species of red trout, which is highly esteemed. The fishery lets for a considerable sum; and it is a singular, and not very easily explained, circumstance, that it is almost the only Scotch lake that yields any revenue to its proprietors.

Loch Lomond, lying between Dunbartonshire and Stirlingshire, is at once the best known of all the Highland, and the largest of all the British, lakes. This noble sheet of water is about 24 miles long; and, where broadest, is from 7 to 7½ miles across; but in its upper part, contiguous to the county of Perth, it is not more than a mile in breadth. On the whole, it is supposed to cover a space of about 28,000 acres. Its most usual depth is about 20 fathoms; but in some places it has a depth of 80 and even of 120 fathoms. It is studded with many beautiful finely wooded islands, some of them of considerable size. The scenery of this lake is most magnificent. On both its east and west sides there are high rugged mountains, among which Ben Lomond stands conspicuous, rising from the water's edge to the height of above 3,000 feet. The recesses between the hills are mostly filled with gentlemen's seats, surrounded with fine natural woods and plantations. But towards its southern extremity the country is rich, fertile, and well cultivated. The surface level of Loch Lomond is from 3 to 5 feet higher in winter than in summer: generally it is about 22 feet above the mean level of the sea at Dunbarton. Its surplus waters are conveyed to the Clyde by the river Leven.

Among the other Highland lakes are Loch Ness, forming part of the Caledonian Canal; Loch Maree, in Ross-shire; Loch Awe, in Argyleshire; Lochs Tay, Rannoch, and Ericht, in Perthshire; Lochs Shin and Naver, in Sutherland, &c. They are mostly all long, narrow, and deep; occupying the bottoms of the hollows between the mountains. Their water is generally pure and limpid; and they are well supplied with trout, perch, pike, &c. We give, on the opposite page, from the *General Report of Scotland*, a synoptical table of the size, situation, and leading features of the principal Scotch lakes.

SECT. 4. *Sea-coast and Sea-ports.*

The coasts of Scotland partake of the character of the country, being generally bold, precipitous, and rocky. They are very much indented, especially on the western side, with inlets or arms of the sea, denominated friths and sea-lochs. These frequently penetrate many miles inland; while, in other places, the shores extend into lengthened headlands or mulls, as in the case of the Mull of Cantire and the Mull of Galloway. Were the coasts of the mainland of Scotland, excluding the arms of the sea, measured by straight lines, they would not exceed from 600 to 650 miles; but, in consequence of the numerous indentations referred to, the actual extent of sea line is believed to be little, if at all, under 2,500 miles! These friths and inlets give very considerable facilities to commerce; and are, in this respect, the more important, as few of the rivers are navigable to any considerable distance from the sea. They also afford convenient fishing stations, and abundant supplies of sea-weed for manure; while they farther tend, by familiarising a great number of the inhabitants to the water, to increase the supply of sailors, and to give additional energy to the spirit of adventure and enterprise.

Setting out from Berwick, the first considerable promontory we meet with is St. Abb's Head, constituting, with the promontories of Ernescleugh and Fastcastle, the eastern extremity of the Lammermoor hills. It is high and bold; and, being separated from the ridge by a narrow dell, it has, at a distance, the appearance of an island. Passing St. Abb's Head, the coast bends west-north-west past Dunbar, which has an indifferent harbour, to North Berwick. A little to the east of the latter, and about a mile from shore, is the Bass, a large, high, precipitous rock, with deep water all round.

The coast of East Lothian has undergone considerable changes; the sea having in some places receded, while in others it has gained materially on the land. The shore consists, in some parts, of high earthy banks; and these, being undermined by the action of the waves, are every now and then falling down. On the other hand, those parts of the shore that are low and flat are constantly extending themselves, by the deposits of sand, shells, and earth, heaved upon them by the tide. A process of this sort is, of course, going on wherever the coast consists of earthy banks or low beaches; and is as obvious on many parts of the English shore as in the district now mentioned. — (See farther, on this subject, *Somerville's Survey of East Lothian*, pp. 297—319.)

The Bass is within the mouth of the Frith of Forth; the southern shore of which bends south-west from North Berwick to Musselburgh; and thence west, inclining to the north, to Airth. Its north is in most places nearly parallel to its southern shore. The distance from the Bass to Elie Ness, on the opposite coast of Fife, is between 9 and 10 miles; but the Frith gets wider immediately after. Its depth, from the Isle of May to Kincardine, may be reckoned at about 48 miles. At Queensferry, above Edinburgh, the channel contracts to about 2 miles in breadth, but it again expands to a breadth of 4 or 5 miles. The shores of this spacious inlet are low, in part rocky, in part a pleasant beach, but everywhere of the greatest beauty. The view of Edinburgh from the Frith is particularly fine. There is good anchorage ground in many parts of this magnificent æstuary: but there is not, in its whole extent, a single good harbour The principal ports on its south side are Leith, Queensferry, Borrowstonness, and Grangemouth; with Bruntisland, Kinghorn, Kirkcaldy, and Largo on the north side. Leith, being the port of Edinburgh, has a considerable trade; and very large sums have been expended on the construction of docks, and in efforts to improve the harbour. Owing, however, to the want of water, Leith is not, and we apprehend never can be, any thing better than a high-water harbour; and even at springs it has not more than 16 or 17 feet. But at Newhaven and Granton, a little more to the west, the water near the shore is a good deal deeper: it would be comparatively easy, by carrying out piers in either of these places, to make a harbour accessible at all times; and this, in fact, is now being attempted. Grangemouth, situated at the eastern extremity of the Forth and Clyde Canal, has a good deal of trade. It is rarely, however, visited by ships drawing more than 10 or 12 feet water. Bruntisland is a good high-water harbour, as is also Kirkcaldy. There is pretty good anchorage ground in Leith Roads, Bruntisland Roads, and Largo Bay. Light-houses have been erected on Inchkeith Island, opposite to Leith, and on the Isle of May, at the mouth of the Frith.

The shores of Fife, or of the extensive peninsula lying between the Friths of Forth and Tay, are mostly rocky, without, however, being lofty. At St. Andrew's, and some other places, the sea has encroached considerably on the land. Fifeness, the eastern extremity of the county, lies nearly north from the Isle of May, distant about 6 miles. From this point the shore turns north-west to the mouth of the Eden, and then north to Tentsmoor Point, at the mouth of the Frith of Tay. St. Andrew's Bay, in the elbow, affords good anchorage in from 9 to 12 fathoms; but the harbour of St. Andrew's dries at low water.

Nearly due east from Buttonness, distant about 12 miles, is the Bell Rock, a dangerous insulated ledge, about 850 yards in length by 110 in breadth. At low water some of its summits appear from 4 to 8 feet above the level of the sea; but at high water they are always covered. Many vessels have been lost upon this rock; and, to lessen the chance of such disasters in future, a magnificent light-house, constructed on the model of the Eddystone, has been erected, within these few years, on one of its points. The lantern is 115 feet above low-water mark.

Leaving the Tay, which has been already described, the land stretches north by east, in a pretty even line, as far as Buchanness Point, in Aberdeenshire, the most easterly land in Scotland, in lat. 57° 29′ 15″ N., long. 1° 47′ W. The coast, though in some places low and sandy, is mostly bold and rocky. Between Arbroath and Montrose there are cliffs penetrated by tremendous caverns; of which the Geylit Pot, forming a communication between the sea and a circular chasm at some distance in the country, is the most celebrated. The sandy part of this coast lies principally contiguous to, and immediately north from, Aberdeen. In some places the sand is so moveable that it has more than once occasioned great mischief. Near Buchanness are the famous arched rocks, called the Bullers of Buchan, enclosing a natural harbour.

Unfortunately, there is not, on the whole coast, from the Tay to Buchanness, a single really good harbour. Montrose and Aberdeen, which, especially the first, are by far the best, have been already noticed. Stonehaven harbour dries at low water; and at high water, when the wind is easterly, there is a very heavy swell. Peterhead, a little to the north of Buchanness, has a double harbour; but it also labours under a deficiency of water, though recently it has been much improved. A good deal of trade is carried on from the town; the inhabitants of which have distinguished themselves by the spirit and success with which they have embarked in the whale and herring fisheries. A light-house has lately been erected on the Point of Buchanness.

From Peterhead a bold and rugged shore extends north, inclining a little to the west to Kinnaird Head, the *Taizalum Promontorium* of the ancients. It is crowned by a castle and a conspicuous light-house. At Kinnaird Head, the northerly direction of the coast suddenly changes; and, stretching nearly due west by Troup Head and Knock Head to Burgh Head, it declines south-west to the bottom of the Moray Frith and Loch Beauley. This line of coast forms the base of the vast triangular bay, extending from Kinnaird Head to the mouth of the Moray Frith, and thence to Duncansby Head. The ports from Kinnaird Head to Fort George are merely tide havens. In the first part the shore is bold, precipitous, and picturesque; but from the Burgh Head, along the Moray Frith to Loch Beauley, it is mostly low and sandy. Large vessels may anchor opposite Inverness, or go farther up to Loch Beauley.

The east end of the Caledonian Canal unites with the Moray Frith at Clachnacarry Basin, a little to the west of Inverness. The canal admits vessels drawing 15 feet water.

Crossing the ferry from Inverness to the opposite shore, the coast, which is low and sandy, stretches north-east to the mouth of the Frith of Cromarty, and thence to the promontory of Tarbet Ness, separating the Moray Frith from the Frith of Tain or Dornoch. The Frith of Cromarty is about a mile wide at its entrance, extending south-west to Dingwall, about 17 miles. It is, beyond all doubt, the finest harbour on the east coast of Great Britain, and is, indeed, surpassed by very few in any part of the world. At its mouth it has from 30 to 22 fathoms water, the depth within varying from 15 to 7 fathoms. The town of Cromarty stands on the south side of the Frith, a little within its mouth. Owing to the limited extent of the good land round the Frith, and the want of manufacturing towns, population, and internal communication, it has very little trade; so that this excellent harbour is comparatively useless.

Between the point of Tarbet Ness, on which is a light-house, and Dornoch the coast of Sutherland takes a north-east direction. Except at Brora and a few other places, it is mostly low and sandy. But on the confines of Caithness the mountains come down to the water's edge, terminating in the lofty stupendous precipices that form the Ord of Caithness.

From this point the coast pursues its north-easterly direction to the Noss Head. It is in general bold and rugged. In one of the openings of the cliffs is the thriving town and harbour of Wick. Being conveniently situated for the herring fishery, of which it is now the principal station, great efforts have been made to improve its port; and they have been so far successful, that it affords safe accommodation for large numbers of the smaller class of vessels.

Noss Head lies a little to the north of Wick. It is remarkable for its high bold cliffs, which, in clear weather, are visible at a great distance at sea. Within the head is Sinclair's Bay, in which ships may anchor with off-shore winds. From the bottom of the bay the coast runs north north-east, till it terminates in Duncansby Head. This celebrated promontory, the *Berubium* of the ancients, and the extreme north-east point of Great Britain, is in lat. 58° 38′ N., long. 3° 2′ W. It consists of lofty perpendicular cliffs, some of which stand detached in the sea, and are sometimes mistaken by mariners for Noss Head, to which it bears a considerable resemblance. To obviate such mistakes, which have been occasionally attended with fatal consequences, it has been proposed to erect a light-house on Duncansby Head. John o'Groat's house is about 1½ mile west from the extreme point of Duncansby Head. Of this structure nothing now remains but the foundations.

About 3½ miles east by north from the Head are the rocky islets called the Pentland Skerries. For the security of mariners in the Pentland Frith two light-houses have been erected on the Great Skerry. In the Pentland Frith the tides are very violent. When strongest they run about 9 miles an hour.

From Duncansby Head the coast runs north-north-west, in a waving line, to Dunnet Head, the most northerly headland of Great Britain, in lat. 58° 40′ 30″ N., long. 3° 22′ W. It is high and rocky. A light-house has recently been erected on the Head, the lantern being 346 feet above the mean level of the sea.

Between Dunnet Head and Holburn Head is Dunnet Bay, having the town of Thurso, with a moderately good harbour, on its south-western side. But it is too remote, the country around too barren, and the navigation of the Pentland Frith too dangerous, to allow of its ever becoming a place of any importance.

From Holburn Head the coast, which in some places is deeply indented, and in others runs out into bold precipitous headlands, — of which Strathy Head and Far Out Head are the most remarkable — pursues, on the whole, a nearly westerly direction, till it ends in Cape Wrath, or Parph Head. The cliffs that compose the sides of this famous headland consist of old red sandstone, and are singularly magnificent; some of them overhang the sea to the height of from 300 to 500 feet, exhibiting vast fissures, caverns, and subterranean openings, into which the water rushes with tremendous fury. The headland of the Cape itself is, however, a mass of granite, washed smooth and bright by the ceaseless action of the waves. It is fenced round with dangerous rocks, some of them nearly a mile from shore. Cape Wrath forms the north-western extremity of the mainland of Great Britain, and is in lat. 58° 37′ N., long. 5° W. A light-house was erected on it in 1828, having the lantern elevated 400 feet above high water mark.

It would be useless to enter at so much length into the description of the western coast of Scotland from Cape Wrath to the Clyde: it is sufficient to observe that, throughout its whole extent, it is rugged, wild, and dreary, the mountains generally coming close to the water's edge. It is indented in many places by narrow arms of the sea, penetrating far inland, carrying, in most instances, a great depth of water even to their inmost recesses, and affording safe but unfrequented asylums for the largest fleets. Linnhe Loch, taken in connection with Loch Eil, is one of the most important of these inlets: it stretches north-west from Dowart, in Mull, to the western extremity of the Caledonian Canal, of which it may be said to form a part, a distance of about 34 miles, and has deep water throughout.

The islands of Skye, Mull, and Jura are separated from the mainland by narrow channels, through which the tide rushes with much force. In some places it forms dangerous whirlpools, as at Corryvrechan, between Jura and the small island of Scarba.

The great arm of the sea, lying between the Mull of Cantire and the Ayrshire coast, has the Island of Arran in its centre. At its northern extremity it branches off into the two great divisions of Loch Fyne and the Frith of Clyde, separated by the island of Rothsay and the district of Cowall, in Aygyleshire. The Frith of Clyde is again subdivided into three arms; viz., Loch Long, separating Argyleshire from Dunbartonshire; Loch Gare, of very inferior dimensions to Loch Long, but parallel to, and separated from it by a narrow isthmus; and the æstuary of the Clyde, winding east, with a little inclination to the south, having Dunbartonshire in the angle between it and Loch Long.

Loch Fyne extends, with a slightly circular sweep, from Skipness Point, round by Silvercrags and Inverary, to Achadounan, a space of about 40 miles. Its breadth from Skipness Point to the opposite point of Cowall is about 7 miles, contracting gradually as it penetrates into the interior. It has very deep water throughout; so much so, that at Inverary, within about 7 miles of the bottom of the loch, there are upwards of 60 fathoms! Loch Fyne used to be one of the principal seats of the herring fishery. The Crinan Canal, between Loch Gilphead on Loch Fyne and the head of the sound of Jura, insulates the long narrow peninsula of Knapdale and Cantire; and, consequently, saves those vessels that would otherwise be obliged to go round the Mull of Cantire a lengthened navigation.

The water in Loch Long and Loch Gare is also very deep; and in the Frith of Clyde, within a short distance of Greenock, there are 23 fathoms at ebb. This and Port Glasgow are the principal harbours of the Clyde, and, as such, possess a good deal of shipping, and enjoy an extensive commerce. Lamlash Bay, on the east coast of the Isle of Arran, is, however, the finest harbour near the mouth of the Clyde. It is completely land-locked, being protected from the easterly gales by the little island of Lamlash.

The Ayrshire coast, as far as Girvan, is mostly low and sandy. A great deal of labour has been expended on the formation of a harbour at Ardrossan, to which it was intended to bring a canal from Glasgow; but the canal has only been excavated as far as the thriving village of Johnston, a little to the west of Paisley; and it is now proposed to construct a railroad from Johnston to Ardrossan. The harbour of Troon, about 10 miles from Kilmarnock, to which it is united by a railroad, has recently been very much improved by the exertions and at the expense of the Duke of Portland, and is now decidedly the best on the coast. Ayr harbour has also been materially improved; but it dries at low water, and the westerly gales throw in a heavy sea. From Girvan to Wigtownshire the mountains come close to the water's edge, so that the shore is bold and precipitous. Opposite to Girvan, and about 10 miles distant, is the rock of Ailsa, already noticed.

The north-west part of the county of Wigtown is indented by Loch Ryan, a fine sheet of water, extending from Kirkcolm Point to Stranraer. Within this loch, and opposite to a place called Cairn, there is good anchorage, and water sufficient to float the largest ships. A little to the westward of Kirkcolm Point is the point of Corsewall, on which is a light-house. Hence the shore stretches south, inclining a little to the east, by Port Patrick to the Mull of Galloway. This bold prominent headland, the most southerly point in Scotland, is in lat. 54° 38′ N., long. 4° 52′ W. It has recently been surmounted by a light-house, the lantern of which is elevated 325 feet above the level of the sea at high water. Port Patrick is about 22 miles from the port of Donaghadee, in Ireland.

The Mull of Galloway forms the north-western extremity of that vast bay, bounded on the north by Galloway and Dumfriesshire, on the east by Cumberland, Lancashire, and Cheshire and on the south by North Wales, having the island of Anglesea at its south-western extremity. The Isle of Man lies between its horns, and marks its western limits.

Passing the Mull of Galloway, the Bay of Luce opens; a broad expanse of water, extending northwards to within 6 or 7 miles of Loch Ryan, and nearly insulating the western district of Wigtownshire, called the Rhynns. The western shore of this bay terminates in the bluff rocky promontory of Burrow Head. Between this latter point and the Mull of Galloway, and about equidistant from each, are two remarkable rocks, called the Scaurs, much resorted to in the breeding season by water-fowl.

Leaving the Burrow Head, the coast is again indented by the bay of Wigtown. From the eastern boundary of this bay, at the Ross, the shore of the counties of Kirkcudbright and Dumfries stretches in a broken uneven line, east by north, till it unites with that of England, at the bottom of the Solway Frith.

The coast of Galloway, except in the upper parts of Luce and Wigtown bays, is mostly bold and precipitous. Its best ports are at the Isle of Whithorn, near Burrow Head, and Kirkcudbright Bay. The coast of Dumfriesshire is mostly low and sandy. The tide in the Solway runs with great force, the flood sometimes advancing with a head 3 or 4 feet high. We subjoin an account of the

Principal Headlands and Places on the Coast of Scotland, with the Latitude and Longitude of each, as given by the best Authorities.

PLACES.	Lat.	Long.
	° ′ ″	° ′ ″
St. Abb's Head - - -	55 56 0 N.	2 7 30 W.
North Berwick - - -	56 4 0	2 42 0
Edinburgh Observatory - - -	55 57 19	3 10 56
Fifeness - - - -	56 17 0	2 35 0
Buttonness Light-house - - -	56 28 0	2 44 15
Montrose - - - -	56 42 10	2 27 15

PLACES.	Lat.			Long.		
	°	′	″	°	′	″
Aberdeen	57	9	0 N.	2	9	0 W.
Buchanness Light-house	57	29	15	1	47	0
Kinnaird's Head Light-house	57	41	40	2	1	0
Inverness	57	31	0	4	12	10
Tarbet-Ness Light-house	57	54	0	3	47	0
Noss Head	58	30	0	3	9	0
Duncansby Head	58	38	0	3	2	0
Dunnet Head	58	40	30	3	22	0
Far Out Head	58	36	0	4	44	0
Cape Wrath	58	37	0	5	0	0
Ru Rea Point	57	54	30	5	32	0
Ardnamurchan Point	56	45	0	6	8	30
Mull of Cantire Light-house	55	19	0	5	49	0
Greenock	55	58	0	4	44	0
Glasgow	55	51	32	4	16	0
Corsewall Point Light-house	55	1	0	5	10	0
Portpatrick	54	50	0	5	8	0
Mull of Galloway Light-house	54	38	0	4	52	0
Burrow Head	54	42	0	4	22	15
Southerness Light-house	54	52	15	3	37	0

SECT. 5. *Geology.*

Scotland not being separated from England by any great natural boundary or intervening sea, the geology of the adjacent districts in each is nearly the same; but, if we take a general survey of the whole country, we shall find the great features of the geology of Scotland very different from those of the geology of England. If a line be drawn in a north-east direction, from the mouth of the Clyde to Stonehaven, on the eastern coast, nearly the whole of Scotland south of that line is composed of transition rocks, covered in many parts by coal-measures, traps, or red sandstone. On the north of this line nearly the whole country is composed of primary rocks of granite, gneiss, and mica slate, covered at the feet of the mountain chains with beds of conglomerate and red sandstone. The upper secondary strata, which are spread over nearly the half of England, scarcely appear in Scotland, and can only be traced in a few detached patches, which bear no assignable proportion to the surface of the country. The general bearing of the different mountain ranges in Scotland is from south-west to north-east. The force by which the mountain ranges were upheaved appears to have acted in distant and nearly parallel lines, not only through the mainland of Scotland, but also in the western Islands. Thus, the islands from Barra to Lewis are so nearly connected that they may be regarded as one chain or range of mountains, composed of gneiss, running from south-west to north-east for about 100 miles, in a parallel direction with the mountain chains in the north of Scotland, but separated from them by a deep valley, which forms the bed of the intervening sea. The mainland of Scotland itself is nearly divided into two islands, by a deep valley, running in the same direction, and forming the bed of several long and narrow lakes, or lochs, between the sound of Mull and the Moray Frith. The general direction of the numerous lochs which open to the sea, and run for many miles inland, is also from south-west to north-east, owing to the same cause, — the parallelism of the mountain ranges to the same direction.

We shall commence our survey of the geology of Scotland with the more alpine or primary districts north of the Clyde and the Forth; but the Western Islands, or Hebrides, may be viewed as an interrupted extension of the alpine ranges of Scotland, the direction and composition of the mountain beds being nearly the same: we shall therefore notice them before proceeding to the mainland. The range of islands, of which Lewis is the northernmost, and by far the largest, extends, as before mentioned, for about 100 miles in a south-west and north-east direction. These islands are so nearly united as to have received the popular name of the "Long Island." According to Dr. Macculloch, to whom we are indebted for almost every thing that is known respecting their geology, gneiss is the predominant and fundamental rock of the whole range; which he appropriately denominates the Gneiss Islands. The gneiss presents nothing very different from the general character of this rock in other situations: the beds are often broken, and much contorted, and are intersected by numerous veins of granite. Beds of mica slate, talc slate, hornblende slate, clay slate, and greywacke occur in some parts; and the gneiss itself passes by gradation into these rocks. There are also some beds of conglomerate, composed of rolled pebbles of various sizes, imbedded in sandstone and compact gravel: this conglomerate, Dr. Macculloch says, bears a perfect resemblance to most part of that great mass of conglomerate beds found in the mainland of Scotland, separating the primary from the secondary strata; but, in general, it is of a much harder texture. It reposes immediately on the gneiss. The islands of Coll, Tiree, and Iona, situated at a considerable distance from the Long Island, are also classed by Dr. Macculloch with the Gneiss Islands. In Tiree the gneiss often contains masses of limestone. The rose-coloured or pink limestone, with hornblende and green augite, called Tiree marble, and well known by mineral collectors, is an irregular mass, about 100 feet in diameter, surrounded on all sides by gneiss: nearly half the mass has been already worked out.

The next group of islands is called by Dr. Macculloch the Trap Islands, from being chiefly composed of basaltic or trap rocks. The two principal of these islands, Skye and Mull, are so close to the mainland as scarcely to leave a doubt that they have been united to it at no very remote geological epoch; and it is probable that many of the existing peninsulated promontories will, in process of time, become entirely insulated, by the impetuous action of the ocean on the narrow tongues of land by which they are now connected with the mainland. Skye, the largest and northernmost of the Trap Islands, with the exception of a small tract on its western side, is chiefly formed of trap rocks; comprising in that term the different varieties of basaltic rocks, composed of felspar and hornblende, or felspar and augite, in various proportions, and passing from a compact to a granular structure. In some parts the felspar forms nearly the whole mass: in other parts it is porphyritic, and sometimes intermixed with granular hornblende, forming syenite. In Skye and the other Trap Islands the trap rock frequently assumes the columnar structure. The Cuchullin mountains, in this island, are principally composed of a rock containing hypersthene, or hornblende, with a semi-metallic lustre. The limits of the present article will not admit of mineralogical details; but there is an important fact in the geology of the Isle of Skye which must not pass unnoticed. The secondary strata of the lias and oolite formation, which rarely appear anywhere in the mainland of Scotland, occur near the eastern side of the island, containing the characteristic fossils of these beds; but where the lias approaches the syenite it is converted into a crystalline limestone, nearly white. A few patches of similar limestone occur on the western side of the island, and in the adjacent small islands of Raasay, Scalpa, and Pabay. The lias is bounded by red sandstone. The fundamental rock of the Isle of Skye appears to be gneiss, which is seen along part of the eastern coast.

Mull is the largest of the Trap Islands after Skye. The geology, in a general view, is nearly the same in both, except that in Mull, on the westernmost headland, opposite Iona, there are rocks of granite and gneiss. A few patches of the lias and oolite formation, and sandstone, occur near the coast: with these exceptions the whole island is covered with various trap rocks, frequently assuming the columnar form. Some small seams of coal have been found both in Skye and Mull, but they are of too little value to be worked. Mull is the most mountainous of all the Hebrides. Ben More is 3,168 feet above the sea: the other mountains seldom attain a higher elevation than 2,000 feet.

The Trap Islands, between Mull and Skye, are Rum, Canna, Muck, and Egg. Of these, Rum, the largest, is skirted on the eastern and southern sides by red sandstone. The Isle of Egg is remarkable for a lofty rock, called the Scuir of Egg, placed on a high range of trap rocks. It towers over the whole island, resembling an immense castle. The face of the rock is nearly vertical, and is 470 feet in height: it is composed of columnar pitchstone, which contains imbedded crystals of glassy felspar. The Scuir of Egg is an object of considerable interest both to the tourist and the geologist, and can be visited with greater facility than Staffa. Part of the Isle of Egg appears to have lias for the fundamental rock: it is seen on the northern shore.

Staffa, the smallest of five basaltic islands off the north-west side of Mull, has long been celebrated for its basaltic columns and cavern, called Fingal's Cave. The island, or rock, is about a mile and a half in circuit, surrounded by basaltic cliffs of variable height: the highest on the south-west, as measured by Dr. Macculloch, is 144 feet. The cliffs generally present a columnar arrangement; but the columns are inclined in various directions, oblique, horizontal, or erect. There are three distinct beds of trap, of different characters, the lowest consisting of that conglomerate called trap tuff; the next of the great columnar basaltic range; and the uppermost of an irregular mixture of columnar and amorphous basalt. These beds dip towards the east, at an angle of elevation of about 9°. The lowest bed, on the western side of the island, is about 50 feet thick: the middle, or columnar bed, varies in thickness from 36 to about 54 feet, which is the extreme height of the columns: the upper or amorphous bed of basalt measures 58 feet in thickness above the highest columns, but in other parts it is much thinner. The cave called Mackinnon's Cave is an opening in the lowest bed: it is about 58 feet high, measured from the sea at quarter-ebb tide. Its breadth is 48 feet, and its length 224 feet. The sides of this cavern are smooth, being formed of conglomerate, and are deficient in that regularity which constitutes the beauty of Fingal's Cave.

Fingal's Cave, one of the most remarkable natural excavations in the world, is formed in the columnar bed of basalt, where it declines to the level of the sea, which washes the feet of the columns that range on either side the cavern like the pillars of an immense cathedral, placed close to each other, the sea forming the floor. The top of the arch at the entrance is 66 feet above the level of the sea at mean tide: the bed of amorphous basalt that rests upon the columns is 36 feet thick: the breadth of the cave at its entrance is 42 feet, and its length 227 feet. The pillars on the western side are 36 feet high; but on the eastern side they appear lower, being partly concealed by broken columns in front of them. The height of the cave diminishes within from 50 to 40 feet, which is also the altitude at the extremity. —(See *Dr. Macculloch's Western Islands of Scotland*, vol. ii. pp. 16, 17.) There are other caverns of less note on the island.

The surface of Staffa is covered with a good soil, and luxuriant grass. There are various blocks of granite, quartz rock, and schist, similar to the rocks on the mainland of Scotland, spread over some parts of Staffa, though no rocks of this kind appear *in situ*. The basalt, of which the columns in Staffa is composed, is very similar to that of the Giant's Causeway in Ireland. *Were the two basaltic formations ever united?* This is not very improbable: the basalt of Ireland was evidently of submarine origin; and we conceive it to be highly probable that the basalt of Staffa was erupted under the sea, although no calcareous marine beds are found upon it. St. Kilda, the most remote of the Western Islands, is composed of several varieties of trap rocks. There are several small isles, composed principally of trap rocks, in the vicinity of Mull; but they do not present any peculiarity of structure or composition which require a description. South of Mull, there is a group of islands, which Dr. Macculloch calls the Schistose Isles: the principal of these are Jura and Islay. They are chiefly composed of clay slate, chlorite slate, quartz rock, with some mica slate, and of various admixtures of felspar and hornblende, and also greywacke and limestone: the latter is but in small quantity, and interposed between laminæ of slate rocks. The different rocks succeed each other: the dip is to the south-east; but, as several of these rocks are repeated in succession, the exact order of superposition cannot be traced. Were it not for the absence of granite and gneiss, these islands might be considered as a type of all the primary districts in Scotland north of the Clyde. The most remarkable feature in their geology is the great proportion of granular quartz, called quartz rock. Mountains of quartz rock most frequently assume the conical form. The three remarkable mountains in Jura, called the Paps, are composed of this rock: their average height about 2,500 feet.

The most southerly of the Scottish Isles deserving attention is Arran. Its situation near the mouth of the Clyde rendering it easy of access, it is more frequently visited by geologists than any of the Hebrides. If a line be drawn in a north-east and south-west direction from the south of Brodick Bay, on the west, to Machrie Water, on the east, it will divide the island into two nearly equal parts, distinguished by their external features and internal structure and composition. In the northern portion, the central parts are occupied by lofty mountains of granite, surrounded by different varieties of slate rocks, except on the eastern side, where masses of conglomerate skirt the granite mountains, and are interspersed between them and the sea. As seen from near the coast, the granite mountains rise with much grandeur, and their serrated peaks remind the traveller of the granitic Aiguilles in the vicinity of Mont Blanc, in Savoy. The highest granite mountain in Arran, Goatfell, is 2,865 feet above the sea. The southern portion of Arran is chiefly occupied with secondary strata, covered in many parts by various trap rocks, which form the principal hills in this division of the island. The secondary strata of Arran, according to an examination by Messrs. Sedgwick and Murchison, consist, in an ascending series, of old red sandstone and conglomerate, some few beds of mountain limestone, over which are various sandstones, and shale of the coal formation, containing some coal, which was formerly worked. The trap consists of a great variety of porphyry, clinkstone, claystone, greenstone, and pitchstone: the latter mineral forms veins of considerable width, intersecting the secondary strata: it passes in some instances from a semivitreous state into a rock which differs little from basalt. These pitchstone veins have excited the attention of geologists, as they present striking indications of their igneous origin.

The Western Islands of Scotland, like the primary districts in the mainland, contain few mineral or metallic treasures that have hitherto been made extensively available for useful purposes: this may be owing to the dangerous and tempestuous seas which surround them, and render their access difficult, except in the summer months; and, probably, they have never yet been examined with the minuteness of research that may be necessary for the discovery of metallic repositories.

The mainland of Scotland, north of the line we have supposed to be drawn from the mouth of the Clyde, in a north-east direction, to the German Ocean, contains almost every variety of the primary rocks, with their diversified admixtures and gradations, and a great number of minerals, regarded as rare by collectors. No coal has been discovered in this part of Scotland, except a small deposit at Brora in Sutherland: it has few metallic veins; and its mineral exports are chiefly roof slate, and stone for building or paving.

This extensive primary country is every where bounded on its southern side by beds of red sandstone and conglomerate, which will afterwards be noticed. The prevailing rock that extends from Argyleshire to Kincardineshire is mica slate, which is skirted by clay slate and chlorite slate: these pass by gradation into the former. The chlorite slate at Inverary has been called by some mineralogists Potstone (*Oolite*): it is sectile, and can be easily shaped into building stone. The castle of the Duke of Argyle is built of it; but it is of too slaty a texture to admit of its being turned in the lathe like potstone. Ben Lomond, and many of the magnificent mountains in the Grampian range, are composed of mica slate, intermixed with hornblende slate and quartz rock, and, in some parts, with a small portion of crystalline limestone. Such are also the prevailing rocks that surround Loch Tay, and the mountains Ben Lawers and Schiehallion, with various alpine ranges in this part of Scotland. On the west, near Inverary, rocks of ancient porphyry appear, and extend northward to Cruachan Ben, on Loch Awe, and Ben Nevis, near Fort William, Inverness-shire. This mountain, the loftiest in Great Britain, being 4,370 feet high, is composed of granite and ancient porphyry, which, like that of Inverary, seems to be a variety of granite, wherein the felspar greatly predominates, and is nearly compact. Near the western coast gneiss is the prevailing rock; and on the eastern coast, in Aberdeenshire and Banffshire, granite and gneiss are the prevailing rocks. We believe that they are continued thence to the northern extremity of Scotland; but in Caithness, and part of the adjacent counties, the primary formations are covered by red sandstone and conglomerate. The granite of Aberdeen is generally small-grained: both the granite and gneiss are intersected by numerous veins of larger grained granite, in which the felspar and quartz are crystallised in distinct concretions of considerable size, and the mica occurs in hexagonal plates of two or more inches in diameter. We observed these concretions particularly large in an enormous granite vein in the quarries near New Aberdeen. The promontory of Cape Wrath, on the north-west extremity of Scotland, is composed of gneiss and hornblende slate; but is so much intersected, in every direction, by granite veins that they appear to form the greater portion of the rock itself. At Portsoy, in Banffshire, there are beds of beautiful dark green serpentine, and good specimens of graphic granite.

Many of the mountains, which appear externally composed of mica slate and other schistose rocks, have a central axis of granite. This is the case with Cairngorm, in Inverness-shire: from this mountain the crystals of smoke-coloured quartz, called Cairngorm stones, are obtained. The most alpine parts of the Highlands of Scotland are Inverness-shire and the western side of Perthshire. North-west of Loch Linnhe and Loch Ness the mountains generally decrease in altitude; but some of the mountains in Ross-shire and Sutherland are among the highest. Benwivis, in the former county, is 3,720 feet, and Benmore Assynt, in the latter, is 3,231 feet, above the level of the sea. Snow often remains on the northern sides of the higher mountains during the whole year. We have observed snow on Ben Ledi, in Perthshire, in the month of August, though it is 1,000 feet lower than Ben Lawers, in the same county. The bottoms of the alpine plains and valleys in the Highlands are often filled with vast accumulations of alluvium, composed of sand and immense blocks of primary rocks. Other alpine valleys and plains are covered with mosses, which sometimes are found, particularly on the north-eastern sides of the mountains, at an elevation of 1,500 or 2,000 feet. It would exceed our limits to enumerate and describe the lochs or freshwater lakes of Scotland: they nearly all take the same direction as the principal mountain ranges, viz., from south-west to north-east. Loch Lomond, the most considerable of the freshwater lakes, varies from this direction, and extends north and south about 24 miles. It is about 7½ miles broad near its southern extremity, but it is much narrower at its northern end. The general character of the Scottish lakes is that of solemn and lonely grandeur: —

> "Where Melancholy sits, and round her throws
> A death-like silence and a dread repose."

In the vast extent of primary mountains, which constitute the Highlands of Scotland, very few metallic oars have been found. Lead mines were formerly worked at Tyndrum, near the western end of Loch Tay. Lead mines of considerable depth are worked at Strontian, in Argyleshire, at which place the carbonate of Strontian was first discovered. There is one mineral production, the occurrence of which in mica slate, we believe, is peculiar to Scotland. At Glen Strathfairar, in Inverness-shire, veins of plumbago run between the laminæ of the mica slate, and have taken the contorted form so common to that rock. In the specimens we examined the plumbago was coated with mica: it is sectile, but does not appear of a good quality.

The peninsular headlands on the western coast of Scotland, north of the Isle of Skye, are covered in many parts with beds of sandstone and conglomerate, often of great aggregate thickness, and resting upon gneiss, which they sometimes cover to the depth of from 1,000 to 2,000 feet. The beds occur nearly horizontal, and also highly inclined. Detached hills of this conglomerate attain the elevation of 3,000 feet, but the base to a certain height is gneiss. The conglomerate hills extend through Ross-shire, along the coast to near Cape Wrath. These isolated hills of conglomerate are regarded as the remains of extensive beds, which have been torn and excavated by the great disturbing forces that have acted on the surface of our planet at an early geological epoch. The beds are of extreme hardness, and, in a certain degree, crystalline; but they contain everywhere, in a greater or lesser quantity, imbedded fragments, and rolled masses, of the lower rocks on which they rest. Some of the finer grained beds resemble granular quartz rock; others consist of fragments and rounded pieces, apparently cemented by a siliceous solution into one crystalline mass. In Caithness, a conglomerate with sandstone and irregular beds of limestone, like the cornstone of Herefordshire, would seem to identify this formation with the old red sandstone of the latter county. There is an extensive formation of bituminous schist in Caithness, between the upper and lower sandstone and conglomerate: the schist contains fossil remains of unknown species of fish; but to what analogous formation it belongs may be regarded as at present undetermined. A great proportion of

Caithness is covered with these beds. Beds of sandstone and conglomerate occur on the shores of the Dornoch and Moray Friths. Near Brora Loch a part of the oolite series and lias covers red sandstone: some seams of imperfect coal occur in these strata. Beds of sandstone and conglomerate also extend along part of the great valley of Scotland, in the line of the Caledonian canal. From the southern flanks of the Grampian mountains, beds of conglomerate and sandstone extend from the German Ocean to the Western Sea, covering the whole country between the Grampian mountains and the basaltic and coal districts on the Forth and the Clyde. An interrupted series of basaltic rocks range from the south-west of the Clyde to near Stonehaven. The basalt, in some instances, forms caps on the summits of hills of sandstone: in other parts, it forms entire hills of considerable magnitude: it is sometimes irregularly interstratified with sandstone. The rock on which Dunbarton Castle stands is basalt. Basaltic rocks may be traced thence to Stirling, Perth, and Montrose.

The Ochill hills, situated in this line, extend from the confluence of the river Allan with the Forth to the north-east extremity of Fife. They consist chiefly of porphyry and amygdaloid. The hill of Kinnoul, near Perth, is an amygdaloid, and contains numerous nodules of agate and cornelian. The summit of Arthur's Seat and the Castle Hill at Edinburgh are composed of basalt; the Calton Hill of porphyritic claystone. Claystone occurs at Braid hills and the Pentland hills; and that variety of basalt in which felspar abounds, called clinkstone, is common in the rocks in this district. Almost every variety of basaltic or trap rocks occurs in the vicinity of Edinburgh. The interesting phenomena they present gave rise to much geological discussion a few years since, when the origin of these rocks was considered as doubtful. Geologists are now generally agreed that they have been formed or modified by subterranean heat: indeed, the basalt of Arthur's Seat is identical with a basalt we have seen in situations near the ancient volcanos in Auvergne, which passes from a compact form to that of scoriaceous lava.

We come now to that important mineral district, the great coal-field of Scotland: it extends, with little interruption, from the eastern to the western coast; but the most valuable portion of this field is situated on the north and south sides of the Forth (not exceeding the average breadth of 10 or 12 miles on each side), and on the north and south sides of the Clyde, ranging through Renfrewshire, part of Lanarkshire, and the north of Ayrshire. This great coal-field has been described as situated between a line drawn from the mouth of the Tay, on the east coast, by Stirling, to the north end of the Isle of Arran on the west; and another line drawn from St. Abb's Head, on the east, to Girvan in Ayrshire on the west coast. The greater part of the coal of Scotland will certainly be included between these lines, which are nearly parallel; but, strictly speaking, these limits include several large detached coal-fields, often separated by intervening tracts of land, in which no coal is found. The Fife coal-field, north of the Forth, extends (according to Mr. Williams) from Stirling to St. Andrews, and is, he supposes, 10 miles in breadth in some parts. The strata are arranged in a trough-shaped concavity: on the south side of the field they dip towards the north, and, on the north side, they dip towards the south. The richest part of the coal-field, north of the Forth, is stated to be between Dysart and Alloa. The extensive coal-field, which lies to the south and east of Edinburgh, forms the boundary of the great coal-field of Scotland, on the east coast, and on the south side of the Forth. Its length is about 25 miles, its greatest breadth 6, and it covers an area of 80 square miles. The strata in the vicinity of Edinburgh, in the north-west division of this coal-field, dip to the south-east, at an angle of about forty-five degrees, and, in some places, are nearly perpendicular; but, in the south-east division of the field, the strata are nearly horizontal: hence these divisions are called the edge-coal seams, and the flat seams. On the west of Edinburgh, for some miles, there are considerable beds of sandstone and limestone, and some small seams of coal; but at Bathgate workable coal strata commence, and extend westward, with some interruption, to the neighbourhood of Glasgow. The Clyde and the Forth form the southern and northern boundaries of this field: beyond Blantyre, the coal extends, on the south side of the Clyde, to the Cathkin hills. After passing Glasgow, this coal-field stretches westward, on the south side of the Clyde, and occupies the valley in the line of the Ardrossan Canal; extending through Renfrewshire to Dalry, in Ayrshire. Other detached coal-fields occur in various parts of Ayrshire. The most southerly is near Girvan, where, according to Dr. Millar, "there are two or three beds of coal equal to 40 feet in thickness." The above coal-fields constitute the principal mineral treasures of Scotland, on which it depends for its manufacturing and commercial prosperity. Ironstone, of an excellent quality, abounds in many of the coal-fields, and has, to use the words of Dr. Millar, "given birth to numerous manufactures, and, in particular, to the operations of the smelting furnace, in the reduction of the ores of iron, as well as of converting that invaluable metal into the multifarious utensils and articles of machinery, for which the peculiar properties which it possesses, in its various states of combination, render it eminently useful. To verify this remark, the iron-works at Shotts, Cleland, Airdrie, and Clyde, and particularly the grand establishment at Carron, need only be mentioned." The iron trade of Scotland has greatly increased since the above account was written. The total amount of iron produced, in 1830, by 376 furnaces in England, Scotland, and Wales, was estimated at 678,417 tons, of which 37,500 tons were produced by 27 furnaces in Scotland. But, during the next four years, the production of iron in Scotland has nearly doubled the produce in 1834, having been estimated at 72,000 tons! This latter quantity exceeds, by 4,000 tons, the whole iron produced in England and Wales so late as 1788. The abundance and cheapness of coal has enabled Glasgow to rival Manchester in the manufacture of cotton goods of almost every quality.

The coal strata, in many of the coal districts, are much broken and deranged by basaltic dykes that traverse them. In the Dysart coal mines, at the depth of 270 feet, the main coal was 21 feet in thickness. At the Quarrelton coal-field, in Renfrewshire, there is a mass of coal from 50 to 60 feet thick in some parts: it is composed of 5 distinct seams, separated by thin strata of stone and ironstone. This great thickness appears to have been produced by a disturbance of the strata, which has caused the series to break and overlap, or double over each other, in one part of the field. The disturbing cause was, in all probability, an irruption or protrusion of the basalt, which covers and underlies the coal.

In Hurlet coal mine, 3 miles south-east of Paisley, which has been worked for two or three centuries, the bed of shale over the coal, in the old workings, has become converted into alum slate by the combination of sulphuric acid, from the decomposition of pyrites with the alumine or clay. The quantity of alum is so great that a large alum work has been many years established there.

Several small coal-fields occur in different parts of the southern or transition districts of Scotland, which are entirely detached from the great coal-field we have been describing. It is deserving of notice, that the mountain limestone, which forms a boundary of the English, Welsh, and Irish coal-fields, and is abundantly developed in their vicinity, exists only to a very limited extent in the geology of Scotland.

The southern part of Scotland, extending from the English border to the coal-fields on the south of the Forth and Clyde, comprises the most fertile and best cultivated lands in Scotland; but it partakes, in a considerable degree, of the character of an alpine country; and the leading features of its geology resemble those of Cumberland, and the portion of Northumberland adjoining Scotland. Several of the mountains rise from 2,000 to near 3,000 feet above the level of the sea: the rocks of which they are composed are, for the most part, of the transition class. Greywacke and coarse slate are the most prevailing beds. Granite is considerably developed on the western side at Criffel, and in its vicinity; and, on the eastern side, the range of Cheviot Hills, composed of porphyry, forms a conspicuous feature in the country. The beds in the vicinity of these porphyritic rocks appear to have suffered considerable derangement of position by the protrusion of the porphyry. Red sandstone occurs in many of the valleys, and surrounds some of the coal-fields; but geologists are not yet agreed to what formation several of these beds belong: indeed, it must be confessed, that the geology of the south of Scotland (in many parts at least) has not been examined in sufficient detail, nor in connection with each other, as a whole geological district. None of the secondary calcareous strata, that cover so large a surface in England, have been discovered in the south of Scotland, nor any vestiges of tertiary formations. The most valuable mining district that has been worked in Scotland is that of the Lead Hills, in Lanarkshire. The prevailing rock is stated to be greywacke. The veins that intersect this rock are rich in lead ores: they vary much in width: one vein, called the Susannah vein, contained a mass of ore 14 feet thick. The mines at Lead Hills formerly produced 1,400 tons of lead per annum, and those of Wanlock Head 1,000 tons. The coal-fields in the south of Scotland are detached and small, compared with those near the Forth and Clyde; but their extent and value has not yet been fully ascertained. The coal-fields at Sanquhar in Nithsdale, and near Cannonby, on the English border, have been worked several years. Coal occurs along the valley of the Tweed, and, probably, in many parts adjoining the English border which have not been yet explored. The coal in this part of Scotland must derive an increased value from its central situation, being at a distance from the great coal-fields of England, and those on the side of the Forth and Clyde. In the soil which covers the Lead Hills and Wanlock Head, a considerable quantity of gold was formerly found. In the time of Queen Elizabeth, 300 men were employed in searching for and washing the gold; and a quantity worth 100,000*l.* sterling is said to have been found in the course of a few years. During the last century the works were resumed; but the quantity of gold discovered was not sufficient to repay the continuance of the operations. The gold was found immediately under the vegetable soil; and was obtained by repeatedly washing the earthy matter with which it was intermixed, the gold subsiding to the bottom. Whether the sand and alluvial soil in the beds of rivers, in any other part of Scotland, have been examined in this manner, we are not informed. Gold may be obtained from the sands of rivers in most of the alpine parts of Europe, but seldom in sufficient quantity to repay the expense.

The Shetland and Orkney Islands may be regarded as an interrupted extension of the primary range, that passes through Caithness. In the Shetland Islands the rocks are much broken by the violence of the waves, and in some parts are cut into various fantastic shapes, presenting the ruins of isles now nearly obliterated. In the Orkney Islands, the primary rocks are covered in many parts by thick beds of sandstone and conglomerate.

The Isle of Man.—It may be doubtful whether this island should be classed geologically with England, Ireland, or Scotland, as it is nearly equidistant from each country: its general character resembles that of the alpine parts of the south of Scotland. From the sea, the Isle of Man presents a mountainous appearance: a group of mountains, of moderate elevation, range in a south-west and north-east direction: the highest of these is Sneafel, which is 2,004 feet above the level of the sea. From its summit, the Mourne mountains in Ireland, the Cumberland mountains, and the mountains on the south-west of Scotland, are distinctly visible. The hilly and mountainous district in the Isle of Man, which forms the greatest part of the island, is chiefly composed of slate and greywacke, containing some beds of roof slate. Low rocks of granite make their appearance in some parts of the slate district. On the southern end of the island, mountain limestone rests upon the slate, separated from it by a bed of conglomerate. The limestone extends from Poolvash to Derby Haven, a distance of about 5 miles. The northern end of the Isle of Man is nearly flat, and is chiefly composed of alluvial soil. A few veins, containing ores of lead, zinc, copper, and iron, intersect the mountains in a north and south direction: they were formerly worked;

but the workings have been abandoned several years. As might be expected from the geology of the island, no coal has been discovered in the Isle of Man: the inhabitants procure their fuel from Whitehaven.

SECT. 6. *Climate.*

The climate of Scotland depends upon the same physical circumstances that have been specified when treating of that of England; the chief differences between them being occasioned by the different geographical relations of the two countries. Scotland is remarkably indented by bays, creeks, friths, or arms of the sea: she has a much more limited extent of inland superficies than England, a wider expanse of ocean on the east, and is placed at a greater distance from the equator. In consequence of this last circumstance, she is more subject to cold winds from the north, to falls of snow, and to ungenial and late springs and summers, than her more southerly neighbour. But the proximity of even the more inland places to the sea, and its tempering influence, prevent snow from continuing long undissolved, and the temperature from remaining, for any very lengthened term, at the freezing point, except in the more mountainous parts. There, however, snow often lies for a very long time; and the labours of the Highland farmers are not unfrequently interrupted for two, and even three, months. Before reaching Scotland, the east and north-east winds have to traverse a wider superficies of ocean than before reaching England, so that they do not reduce the temperature so low in the former as in the latter; and heavy falls of rain more frequently come from these quarters in Scotland than in England.

Owing to these causes, the mean annual temperature of Scotland is very high for the latitude, being about $46\frac{1}{2}^\circ$ in places near the level of the sea. In the more southerly parts of the kingdom the climate differs but little from that of the northern parts of England. Dr. Brewster states the mean annual temperature to be 48·36 at Leith. At Edinburgh, which is elevated from 300 to 400 feet above the level of the sea, and situated about two miles from it, the *annual* temperature is 47·8, and this may be taken as a near approximation to that of the more inland parts of the south of Scotland: the mean temperature of *winter* being 38·6; of *spring*, 46·4; of *summer*, 58·2; of *autumn*, 48·4: the *coldest* month being 38·3, and the *warmest* 59·4.

From a long series of observations made at Gordon Castle and at Kinfauns Castle, between the latitudes 57° and 58° N., the mean annual temperature was found to be $46\frac{3}{10}^\circ$. At Huntly Lodge, which is 440 feet above the level of the sea, it was $45\frac{6}{10}^\circ$. The observations published in the *Transactions of the Royal Society of Edinburgh* very closely approximate to the above, and furnish the following additional results: —

St. Andrew's, on the east coast, in latitude 56° 20′, has a mean annual temperature of $46\frac{6}{10}$; that of the winter months being 39·12; spring, 45·2; summer, 56·4; and autumn, 47·7.

At Wick, in Caithness, in latitude 58° 28′, the mean annual temperature is $46\frac{7}{10}$; that of the winter months being 40·35; spring, 44·41; summer, 53·77; and autumn, 48·82.

At Sumburgh Head, the most southerly promontory of the Shetland Isles, in latitude 59° 52′, the mean annual temperature is $45\frac{1}{2}$°; that of the winter quarter being 40; spring, 43·29; summer, 50·63; and autumn, 47·48.

The *barometric ranges* are often very great and sudden; and, as respects the British Isles especially, are evidently increased with the distance from the equator. On the southern coasts of Great Britain the range of the barometer seldom exceeds two inches; and in the more inland parts of the southern counties it is rarely so much. In the South of Scotland it is about two inches and six or seven tenths; but in the Orkney and Shetland Isles it is fully *three* inches.

The quantity of *rain* which falls on the east side of Scotland varies from 22 to 26 inches; whilst, on the west side, and in the Hebrides, it is nearly twice as much, ranging from 35 to 46 inches, according to situation. Mr. ADIE states the mean annual fall of rain at Edinburgh, for the years 1824 and 1825, to have been $23\frac{1}{2}$ inches, which was distributed as follows: —

	Inches.		Inches.
January	1·090	July	0.860
February	1·360	August	1·690
March	0·880	September	2·230
April	0·990	October	3·460
May	1·940	November	4·140
June	2·030	December	2·080

Mr. DALTON assigns 37 inches as the annual fall at Dumfries; the last six months of the year being the most rainy, and each furnishing nearly an equal proportion. There is a very remarkable difference in the amount of rain that falls in one year from that which falls in another, in all situations where observations have been made. At Dalkeith, a few miles from Edinburgh, at an average of eight years, the annual fall was $22\frac{6}{10}$ inches; at Glasgow, at an average of thirty years, it was 30 inches; at Dundee, at an average of nine years, 22 inches; at Peebles, at an average of fourteen years, 28·7 inches; at Langforgan, on the Tay, at an average of twelve years, 24·5 inches; at Belmont, in Strathmore, at an average of ten years, $30\frac{1}{2}$ inches; at Carbeth, in Stirlingshire, at an average of eight years, 42 inches; at Mount Stewart, in Bute, at an average of seven years, 46·6 inches. Sir John Sinclair estimates the mean annual fall of rain in Scotland at 31 inches. Argyle, with its islands, has, perhaps, the most rainy climate in Scotland. Ireland is interposed between Galloway, and Ayrshire, and the Atlantic ocean; but this district is exposed, without any such protecting screen, to its entire influence. "Its lofty mountains attract the vapours that arise from the ocean, and the clouds burst in torrents upon the valleys. In the district of Cowall, and probably over the whole county, the face of the heavens is generally lowering and cloudy; a serene sky is seldom to be seen. The winds, prevented from a free circulation, rush through the glens with irresistible violence; and at the bottom of high hills, and in narrow valleys, the transitions from heat to cold are sudden and excessive. The winters are, for the most part, mild and temperate; but the summers are frequently rainy and cold. Frosts are not intense, nor do snows lie long."—(*General Report of Scotland*, Appendix, vol. i. p. 123.) We are not aware that observations with the rain-gauge have been made in Orkney or Shetland; but we believe that the quantity of rain falling in them is not much under that which falls on the western coast. The truth is, however, that the *quantity* of rain that falls annually in any country is a very inferior consideration compared with the *distribution* of that quantity over the year. It is by this that the operations of the agriculturist are principally influenced, as it is this that determines the character of a climate. A great deal of rain may fall in a country; but if, like tropical rains, it mostly falls within a short space of time, as two or even three months, its climate is said to be dry; whereas a country, with a much smaller total fall of rain, but distributed over a half or two thirds of the year, is said to have a wet climate.

From an analysis of the statistical accounts of Scotland, it would appear that the average number of days in which either rain or snow falls, in parts situated on the west coast, is about 200, on the east coast about 145. And it is owing to this excess in the number of rainy days, more than to the excess in the total quantity of rain, that the climate of the western side of the kingdom is said to be wet as compared with that of the eastern side; and that it is less fit for the maturing and ripening of corn.

Winds in Scotland are influenced by the physical circumstances already explained (see sect. on the *Climate of England*); but they are even more variable than in England, and more boisterous, especially about the equinoxes. Westerly winds are the most prevalent, particularly during autumn and the early part of winter, but north-east winds are prevalent and severe, especially on the east coast, during March, April, and May, and sometimes part of June. High gales are generally from the west. The weather is exceedingly variable in winter and spring, particularly in the northern and western districts. The occurrence of snow, frost, sleet, and rain, with calms and high winds, in the same day, is by no means unusual. In the most northerly parts, snow generally begins to fall about the middle of November, and continues or recurs until March or April. Thick fogs, with small drizzly rains, are frequent in spring and autumn, and generally throughout the year, especially in the Western and Northern Isles, and when the wind blows from the east. In the Shetland and Orkney Isles the heaviest and most prolonged falls of rain are from the east and south-east.

The influence of the climate upon the vegetable productions of the country is very considerable; but much is also owing to the nature of the soil, its height above the level of the sea, exposure, &c. The numerous and extensive peaty moors and morasses in hilly districts, particularly in the northern and insular parts, seem to be the result chiefly of low temperature, humidity of the air, and imperfect drainage. Some of these morasses have been formed within a comparatively recent period; and if they have not actually deteriorated the climate, they must, at all events, have materially counteracted the influence of the ameliorations growing out of improvements in cultivation, drainage, &c.

During summer and autumn vegetation is luxuriant, and, even in the eastern and southern districts, is very seldom interrupted or stunted from deficiency of moisture. The lateness of spring and summer, the occasional prevalence of north-easterly winds and fogs during these seasons, the variableness of the weather, the frequent short duration and rarity of sunshine in autumn, and the occurrence of high gales in September, are the principal defects, in an agricultural point of view, of the climate of Scotland; and require a degree of exertion, activity, and skill on the part of the husbandman, to secure his crop from damage, to which the farmer in the south of England is unaccustomed. These circumstances, too, either altogether prevent the cultivation of wheat to the north of the Grampians, except in a few peculiarly favourable situations along the Moray Frith, or render it uncommonly precarious. It is very rare, indeed, that crops in Scotland suffer from drought or too much heat. Almost all the bad harvests and scarcities that have occurred have been occasioned by the opposite circumstances, — by cold wet summers and autumns.

In the western and northern isles, and in many parts along the western coast, the crops of corn not unfrequently suffer from the spray of the sea blighting them before they reach maturity; while high winds shake or beat the grain from the ear when ripe. Very heavy losses have sometimes occurred from these causes; and hence oats, which suffer most from high winds, are seldom allowed to stand till they be dead ripe; and are frequently, indeed, particularly on the west coast, cut down when they are a little greenish. To the circumstances now mentioned is also to be ascribed the deficiency of trees and plantations on both the west and east coasts, but especially on the former and in the Hebrides, and the Orkney and Shetland Isles. There the frequent high gales roll mountainous waves from the Atlantic, the Northern, and German Oceans, that break with tremendous violence upon precipitous cliffs, dashing the spray and foam to a very great height, and carrying them far over the land. The air is, in consequence, saturated with saline particles, which blight the buds, young leaves, and shoots of trees, and entirely prevent their growth.

The favourable influence of the climate of Scotland on the physical and mental powers of the people is sufficiently manifest. No other country, since the revival of learning, has produced, for the amount of population, so great a number of individuals distinguished in literature, science, and the arts. And, if we except the inhabitants of a few large manufacturing towns, the strength, activity, and longevity of the natives are, perhaps, nowhere exceeded. Though without any accurate data to go upon, we believe it may be truly affirmed, that the mean duration of life is greater in Scotland than in almost any other country. The number also of those who, having reached a very advanced age, still preserve their mental and bodily powers is remarkably great. It is not, however, by isolated instances that the longevity and general vigour of the inhabitants of a country should be estimated; but, 1st, by the proportion of those who arrive at an advanced age; and, 2nd, by the bodily and mental power possessed by those who attain that age. Now, if we take these for criteria, the salubrity of the climate of Scotland is obvious. We are pretty confident, from extensive observation in different countries, that the proportion of the population that reaches 70 or 80 years of age, and the vigour then remaining, are greater in Scotland than almost anywhere else. The countries which rank next to it in these respects are England, Ireland, Norway, Denmark, the North of France, and the countries bordering on the Baltic.

We do not mean to say that other causes, and those, too, of a very powerful description, have not conspired to produce these effects; but it is admitted, on all hands, that they have not been counteracted, and it would be very easy to show, were this a proper place for such discussions, that they have been materially promoted, by the climate.

The causes of the salubrity of Scotland, and of the longevity of its inhabitants, will be shown more fully hereafter; but we may remark, that the objections urged by ill-informed and careless observers to the climate, viz., the prevalence of stormy and changeable weather, and the low range of temperature, are the chief causes of salubrity. From whatever quarter, except one, the wind may blow, a wide expanse of sea is passed over; and the air, though moist, is purified from injurious emanations, which are readily absorbed by the ocean. The country contains comparatively few physical sources of disease. Injurious exhalations from the land are scarcely anywhere observed to prevail: the low grounds in the southern counties are too highly cultivated to produce them; and the moors and mosses, in the northern and more elevated districts, consist chiefly of antiseptic substances; so that the emanations from them, though they reduce the temperature, are in no other way deleterious. Owing chiefly to the circumstance of the winds blowing over a great extent of ocean, the principal foreign matters which the air contains are watery vapour, saline particles dissolved in that vapour, and minute portions of iodinous fumes. But the temperature in the latitude of Scotland will not admit of the air holding much water in solution; and a moderate quantity of moisture is evidently conducive rather than injurious to health. The other substances specified are present in such minute proportions that no injury can result from them.

As it is known to every one who has paid the slightest attention to climate, and its influence on the human system, that Scotland is one of the most salubrious countries in the world, — one of those in which female beauty and manly strength linger longest with their possessors, — it need not be matter of surprise, that so many of its sons, who select other countries for constant or occasional residence, are disappointed in their anticipations; and that they frequently bring back to their native land prolonged and dangerous diseases, the causes of which either do not exist, or occur slightly, and at short intervals, in Scotland.

For accounts of the Botany and Zoology of Scotland see the sections under those heads, p. 100. and p. 111.

SECT. 7. *Civil Divisions.*

In regard to the ancient history of the territorial divisions of Scotland, both civil and ecclesiastical, we find ourselves in a situation similar to that in which we stand regarding too many subjects of Scotch antiquities. We have a large mass, probably a sufficiency, of materials: we find these materials digested, in so far as they are useful in determining particular local questions; but, towards founding a systematic account of the whole subject, the materials have never been, to any satisfactory extent, applied. Scotland has had some profound antiquaries, many clever ones, and a few more noted for ingenuity than honesty; but she has had neither a Camden nor a Selden.

Shires. — In tracing the origin of the division of Scotland into shires, it is probable that much valuable information might be derived from the Parliamentary Records; though the system of representation for the shires was for a long period so undefined, and, when fixed, was long so ill followed out, that even from this source it would be too much to expect a complete elucidation of the subject. At any rate, no one has yet undertaken the labour which the inquiry would involve; and, in the meantime, we are reduced to take our chief information, as to the origin of shires, from the records of the appointment of the sheriffs, and the division of the country into districts, subject to these functionaries. The Latin name of the sheriff (*vicecomes*), and the supposed facts in the history of his office in England, have furnished some Scotch lawyers with a plausible ground for saying, that the sheriff was originally the deputy of the comes or earl. But however the etymology may bear, and whatever may have been the origin of English sheriffdoms, no evidence whatever is believed to exist in Scotch history to show that Scotch sheriffs, even on the first institution of their office, were deputed by or connected with the earls. And it is, at all events, certain that, from the time when sheriffdoms became common, the country continued to be gradually divided into shires, and subjected to the jurisdiction of sheriffs, without the smallest regard to the powers of the earls, or the territorial extent or boundaries of earldoms. The old earldom of Lennox included several districts, which, at a very early period, were divided into separate shires or sheriffdoms: the shire of Perth, again, included several earldoms; and some districts, of which Berwickshire is one, were erected into shires, without seeming to have been ever under an earl.

No trace of sheriffdoms in Scotland has been found further back than the twelfth century. The office and the territorial division are mentioned in the reigns of Alexander I. and David I.; but a considerable period elapsed before the office, or the division of territory, became general. Some districts, indeed, as Galloway, Ross, and the Western Isles, were not placed permanently under sheriffs for some centuries after that time: with these exceptions, however, Scotland appears to have been universally divided into shires, each subject to its local judge, the sheriff, as early as the accession of Robert the Bruce. The sheriff was the king's judge, and his powers, and the boundaries of his shire, were determined by royal grant; but so early as the period last mentioned, the right of sheriffdom seems, by a mischievous anomaly, to have been sanctioned by law as hereditary right, indefeasible in the family of the grantee. Other partial rights of jurisdiction from the crown sometimes attached to territory, sometimes independent of land, and called sheriffdoms, or stewartries, but both kinds common, and embracing parts of almost every shire in Scotland, operated yet further to defeat one of the great purposes of the division into shires; and in this state matters continued till 1747. In that year an act of parliament abolished all hereditary jurisdictions, except those sheriffdoms which extended over whole shires, and resumed to the crown, to be disposed of by it, the sheriffdoms which were in this position. The act settled the appointment of the sheriffs on the same footing in most material respects, on which it now stands; and it left the division of the shires as it had formerly been, with the exception of some cases, where two small shires were united under one sheriff. It may be worth while to notice, that there is in Scotland no trace of the minor divisions of the English shires, called hundreds, wapentakes, and the like.

Parishes. — Some writers have pretended to find the institution of parishes in Scotland as far back as the ninth century: but the evidence is very weak, and the arguments rendered very unsatisfactory, by the looseness of the phraseology used in the documents founded on; for the word parochia certainly meant, anciently, not parish, but diocese; and in some of the oldest deeds, which have clear reference to parishes, the name used is the Saxon word shire. Charters and other writs make it certain, however, that the parochial division had been introduced and was familiar in Scotland by the middle of the twelfth century; and canons of the Scottish clergy, passed at two of their general councils, held about the middle of the thirteenth century (1242 and 1269), distinctly recognise the universal existence of the parochial clergy, and the allotment of a fixed district or parish to each individual.

Till the Reformation, the bishops retained the power of uniting and disjoining parishes, and were, probably, the parties who originally introduced the division. Between the Reformation and the Union, several successive commissions of the Scotch parliament held, besides powers regarding teinds or tithes, authority also to unite and disjoin parishes. In 1707, Parliament transferred the powers of those commissions to the Court of Session, continuing to this new commission the powers of the older ones over tithes, and full power to unite and annex parishes; but, for the protection of the tithe-payers, limiting their power of disjoining parishes, transplanting old churches, or erecting new ones, to cases where consent is given by persons possessing 3-4ths of the valued rent of the parish. Under that commission the court continue to act.

SECT. 8. *Statistical Notices of the different Scotch Counties.*

Scotland is divided into 33 counties. We shall notice them in succession, beginning with the most southerly.

1. *Wigtownshire*, a maritime county, occupying the south-west extremity of Scotland, is bounded on the west and south by the Irish Sea; on the north by Ayrshire; and on the east by the Stewartry of Kirkcudbright. It contains 293,760 acres, of which about a third may be arable. Surface hilly, but the hills do not rise to any considerable height. It is divided into 3 districts, viz., the *Machars*, extending from Wigtown and Portwilliam to the Burrow Head; the *Rhynns*, comprising the peninsula formed by Loch Ryan and the bay of Luce, terminating in the mull of Galloway on the south, and Corsewall Point on the north; and the *Moors*, or upper district. The soil of the first two districts is for the most part a hazelly loam, dry and well adapted for the turnip husbandry; but near the town of Wigtown there is a considerable extent of rich alluvial land. The moors, which are bleak and barren, comprise more than a third part of the county. Climate mild, but rather moist. Property in a few hands, and mostly under entail; farms middle sized, and uniformly almost let on leases for 19 years. Agriculture in this, as in most other Scotch counties, was formerly in the most barbarous and wretched state imaginable. There was no rotation of crops; the processes and implements were alike execrable; the pasture land was overstocked; and the occupiers steeped in poverty. Marl, of which Galloway contained immense quantities, began to be discovered and applied to the land about 1730; and for a while it caused an astonishing improvement in the corn crops. But their unceasing repetition reduced the soil to its former sterility; and convinced the landlords that marling, which promised so much, and from which so much had been realised, could be of no permanent utility to their estates, unless the tenants were restrained from overcropping. In consequence, principally of this feeling, but partly, also, of the diffusion of intelligence as to such subjects, it was the usual practice, previously to the American war, to prohibit tenants from taking more than *three* white crops in succession; and it was also usual to prohibit them from breaking up pasture land until it had been at least 6 or 9 years in grass. This practice, barbarous as it is, was a vast improvement on that by which it had been preceded; and it prevailed generally throughout Galloway and Dumfriesshire till the beginning of the present century; and in some backward parts lingers even to this day. But in all the best parts of the district two white crops are now rarely seen in succession; and every department of husbandry has been signally and astonishingly improved. Generally, however, the county is more suitable for pasture than for tillage; and it, as well as Kirkcudbright, suffered a good deal from overcropping between 1809 and 1815. Oats and barley principal crops; wheat, however, is now raised in considerable quantities. Potatoes largely cultivated. Turnips have been long introduced, but it is only within the last dozen years that their culture has become an object of general attention; it is now rapidly extending, and large quantities of bone-dust are imported as manure for the turnip lands. Farm-houses and offices mostly new, substantial, and commodious. Roads new, and for the most part excellent. Breed of cattle polled, and one of the best in the empire. Breed of sheep in the low grounds various; in

the moors principally the black faced, or Linton, variety. Average rent of land in 1810, 8*s.* 6*d.* an acre. Minerals and manufactures quite unimportant. Principal rivers, Cree, Bladenoch, and Luce. It is divided into 17 parishes. Wigtownshire returns 1 member to parliament; and the burghs of Wigtown, Whithorn, and Stranraer, in this county, unite with the inconsiderable burgh of New Galloway, in Kirkcudbright, in returning a member. Principal towns and population in 1831, — Newtonstewart, 3,461; Stranraer, 3,329; Wigtown, 2,337; Whithorn, 2,415. Population of county in 1831, 36,258. Valued rent 67,642*l.* Scotch. Annual value of real property in 1815, 143,425*l.*

2. *Kirkcudbright* (*Stewartry of*), a maritime county, forming, with Wigtownshire, the district known by the name of Galloway. It is bounded on the west by Wigtownshire; on the south by the Solway Frith; on the east and north-east by Dumfriesshire; and on the north and north-west by Ayrshire. It contains 533,760 acres, of which about ¼ part is supposed to be arable. Surface almost every where hilly; and in extensive districts mountainous. The highest point of the Kells range, in the northern part of the county, has an elevation of 2,659 feet; Cairnsmoor of Fleet, one of 2,329 do.; and Criffel, a detached mountain on the Solway Frith, 1,831 do. The arable lands lie principally to the south of a line drawn from Dumfries to Gatehouse; the most fertile being situated on the sea coast, and along the rivers Dee and Nith; but Criffel, and some other mountains of inferior dimensions, are situated within this line. Climate in the lower districts peculiarly mild, but in the upper or mountainous districts it is not unfrequently very severe. Some large estates; but property, in general, more subdivided than in most Scotch counties. Farms of a medium size; and let on 19 years' leases. Arable husbandry much improved, but the principal attention is paid to the rearing of cattle. Galloway formerly possessed a breed of horses peculiar to itself, and well adapted for the saddle, distinguished by smallness of head and neck, cleanness of bone, and hardiness of constitution. But this ancient breed is now almost lost; its place being supplied by horses of a larger size, and more suitable for draught. Breed of cattle excellent. Sheep on the moors and high grounds mostly black faced; but Cheviots, South Downs, and New Leicesters are introduced into the lower districts, and the first have begun to make their way into the moors. Breed of hogs much improved, and considerable numbers raised. The greater number of the cattle raised in this, and the contiguous county of Wigtown, have hitherto been sent up half fed to the Norfolk fairs, where they are sold to graziers, by whom they are fattened for the London market; but the practice of fattening cattle and sheep at home, particularly the latter, and sending them by steam to Liverpool, is beginning to be extensively introduced. Farm buildings vastly improved, and on some estates, indeed, a few were constructed previously to 1815 on an absurdly extravagant scale. All considerable farms have thrashing mills. Towards the middle of last century, the roads in this county were little better than mere footpaths; and, with the exception of the military road from Dumfries to Newtonstewart, the others were in most places quite imprac-

ticable for carriages. But now, notwithstanding the unevenness of the country, it is every where intersected by uncommonly level, well-made roads; nor is it easy for any one, at present passing through the south of Scotland, to form any notion of the difficulties the traveller had to contend with even half a century ago. Potatoes extensively cultivated. Turnip culture rapidly extending. Kirkcudbright and Wigtown were early enclosed with those dry stone walls, now well known all over the kingdom by the name of Galloway dykes. When properly constructed, they make an excellent and a very durable fence. They are shortly described in another part of this work. Lead mines were at one time wrought near Newtonstewart, but are now abandoned. Lime, coal, and freestone are all imported, principally from Whitehaven, on the opposite coast of Cumberland. Average rent of land in 1810, 7*s.* 3*d.* an acre. Manufactures unimportant. Extensive cotton works were erected at Gatehouse a good many years ago; but they have proved very unprofitable, and recently have been for the most part abandoned. Principal rivers Dee (see *antè*, p. 254.), Fleet, and Urr: the salmon fisheries on the first important and valuable. The Nith separates Kirkcudbright from Dumfriesshire. Kirkcudbright contains 28 parishes. The county returns 1 member to parliament; and the burgh of Kirkcudbright joins with Dumfries, Annan, &c. in returning a representative. Principal towns and population in 1831, — Kirkcudbright, 2,690; Troqueer parish, including Maxwelton, a suburb of Dumfries, 4,665. Population of county in 1831, 40,590. Valued rent 114,597*l.* Scotch. Annual value of real property in 1815, 213,308*l.*

3. *Dumfriesshire*, a maritime county, is bounded on the south and south-east by the Solway Frith, and part of Cumberland; on the north-east and north by the counties of Roxburgh, Selkirk, Peebles, and Lanark; and on the west and south-west by Ayr and Kirkcudbright. It contains 808,320 acres, of which between a fourth and a fifth part are supposed to be arable. Surface much diversified, but for the most part mountainous. The Hartfell group of mountains lie partly in the parish of Moffat, in this county, and partly in the adjoining county of Peebles. They are amongst the highest in the southern part of Scotland. The summit of Hartfell, in this county, is elevated 2,635 feet above the level of the sea. Many of the other hills have an elevation of from 1,500 to 2,000 feet: and a few, among which are the Queensberry and Lowther hills, rise still higher. They are mostly of an easy curved outline, and, like the Cheviot Hills, are generally covered with a fine green sward. Soils in the lower districts generally light, resting on sand, gravel, or rock. There are some considerable morasses in the lower parts of the country. Climate similar to that of Kirkcudbright. Estates in general very large, and mostly entailed. Farms in the lower districts vary from 100 to 400 acres; in the higher from 500 to 5,000. Leases universal. Arable husbandry much improved during the last 40 years, by the introduction of improved implements, the adoption of a better rotation, keeping the ground cleaner, and by the recent practice of feeding off sheep with turnips. This latter practice has been productive of the greatest advantage both here and in Galloway. So rapidly has it

extended, that it is believed there are at present (1838) about *ten times* as many turnips raised as there were in 1820. This extraordinary increase is owing partly and principally to the facilities afforded by steam navigation for the advantageous disposal of the sheep in the markets of Liverpool, and partly to the introduction of bone manure. It has had a wonderful influence in keeping up the rent of land, and improving the condition of the farmers in Galloway, as well as in this county. Fences and farm buildings generally good and commodious. "Let any one look into the cottages, and he will find them nearly or fully as comfortable as the farm houses were 40 years ago; and let him compare the dress of the cottagers, and their mode of living, with that of the farmers at the above distance of time, he will find that at present they are not greatly inferior." — (*Account of the Parish of Moffat in the new Statistical Account of Scotland,* No. 2. p. 121.) Cattle principally of the Galloway breed. Sheep one third black faced, two thirds Cheviots, but the proportion of the latter continues to increase. Total stock estimated at 230,000. Pigs extensively raised, and the curing of pork, bacon, and ham well understood. Average rent of land in 1810, 6*s.* 1*d.* an acre. The remarks as to the roads of Kirkcudbrightshire may, with little modification, be equally applied to those of this county. There are valuable coal and lead mines in the parish of Sanquhar; and limestone and freestone quarries are met with in various parts of the county, the latter being particularly abundant in the vicinity of the town of Dumfries. Principal rivers, Nith, Annan (see *antè*, p. 254.), and Esk. Dumfriesshire contains 43 parishes. It returns 1 member for the county; and the burghs of Dumfries, Annan, Sanquhar, and Lochmaben, unite, with Kirkcudbright, in returning a representative. Principal towns and population in 1831, — Dumfries, 11,606; Annan, 5,033. Population of county in 1831, 73,770. Valued rent, 158,503*l.* Scotch. Annual value of real property, in 1815, 295,621*l.*

4. *Ayrshire*, a maritime county, lies in the form of a crescent along the eastern side of the Frith of Clyde, having about 75 miles of sea coast. It is bounded on the south and south-east by the counties of Wigtown, Kirkcudbright, and Dumfries; and on the north and north-west by Renfrew and Lanark. It contains 668,800 acres, of which about a half is supposed to be arable. Surface irregular, and in part mountainous. There is a large extent of hill pasture, moor, and bog, particularly in the southern and eastern parts of the county. The arable land lies principally along the shore from Girvan to West Kilbride. The soil in the lower districts, along the coast, is in most parts light and sandy; but in the more inland parts it is principally adhesive clay, and is in some places very fertile. The lower part of the county presents, from the hills on its east and north sides, an uncommonly rich and beautiful prospect. Climate mild, but moister than on the eastern side of the island. Ayr is popularly divided into the three districts of Carrick, Kyle, and Cunningham. The first, which is the largest, lies between the river Doon and Wigtownshire. It contains a large expanse of wild, dreary wastes; but it is not destitute of some very fertile land, particularly the strath along Girvan Water. Kyle, the middle district of the county, lies between the

Doon on the south, and the Irvine on the north: more than half this district is in cultivation; and the lowlands, particularly in the vicinity of the town of Ayr, have a rich, luxuriant appearance. Cunningham lies on the north of the Irvine, between it and Renfrewshire; and, though the smallest, is the most populous, best cultivated, and richest of the three districts. There are several very large estates; but there are also many of the middling and smaller class of proprietors. Arable farms mostly small. Agriculture in Ayrshire, about the middle of last century, was in the most depressed state. It has since been wonderfully improved, and is at this moment in a state of rapid advancement. Wheat and barley are both raised; but in Cunningham in 1819 (and we believe the proportion has not very materially varied in the interval) there were 18,582 acres under oats, and only 2,838 under wheat and barley — (*Robertson's Rural Recollections*, p. 163.); and in the other districts the proportion under oats was still larger. Beans, pease, and potatoes are also raised; the latter in considerable quantities. Dairy husbandry extensively practised, particularly in Cunningham. The Ayrshire cows are celebrated* all over the country as milkers. The well known and much esteemed Dunlop cheese, so called from a parish of that name in the district of Cunningham, is produced in considerable quantities; but a good deal of cheese made in the adjoining parishes, and even in the adjoining counties, is sold as Dunlop cheese. The total stock of cattle in Ayrshire has been estimated at 61,000; and, perhaps, this is not far from the mark, Mr. Robertson having ascertained that the stock of cattle in Cunningham, in 1819, amounted to 21,154, of which 12,563 were dairy cows. The practice of furrow draining, by means of tiles, has recently been introduced into most parts of Scotland; but it has nowhere, perhaps, been carried to such an extent as in this county. Within a few miles of Kilmarnock, several *millions* of drain tiles are now annually manufactured; and, in 1834, the supply was, notwithstanding, inadequate to meet the demand. The Duke of Portland is a very large tile manufacturer, and drains for such of his tenants as require it, on their paying him an additional rent of 5*s.* an acre; and this is said to be very decidedly under the value given by the drainage to the wet clay soils on which it is practised. — (*Dumfries Courier*, 21st July 1835.) Farmhouses and offices much improved; but still inferior to what they are in several parts of Scotland. Fences in the low grounds generally hedge and ditch; and the enclosures smaller than in many other counties. Average rent of land in 1810, 10*s.* 1½*d.* an acre. Roads formerly execrable, now generally good. Minerals important and valuable. Coal is found in many parts of Kyle and Cunningham, and is largely exported from Ayr, the Troon, &c. There are ironworks in the parish of Muirkirk; and limestone and freestone are met with in many places. Various branches of the woollen manufacture, especially those of carpets, bonnets, and worsted shawls, have been long introduced, and are now successfully prosecuted on a very large scale at Kilmarnock, and to a less extent at Stewarton and other towns. Extensive cotton works have been erected at Catrine, on the river Ayr, at Beith, &c.; and large quantities of yarn are wove for the Glasgow and Paisley manufacturers, at Girvan, and other towns. There are some considerable tanneries; and many thousand pairs of boots and shoes are produced for exportation as well as home consumption. Old Cumnock and Mauchline, in this county, are, with the exception of Laurencekirk and Montrose, the only places in Scotland where wooden snuff-boxes are manufactured. They are beautifully jointed and varnished; and are every where in the highest estimation. Principal rivers, Ayr, Doon, Stinchar, Girvan, &c. A railroad has been constructed between Kilmarnock and the thriving and much improved port of Troon. Ayrshire contains 46 parishes. It returns 1 member to parliament; and the burghs of Ayr, Irvine, and Kilmarnock, are associated with others in sending representatives to parliament. Principal towns and population in 1831,—Kilmarnock, 18,093; Ayr, 7,606; Maybole, 6,287; Irvine, 5,200. Population of county in 1831, 145,055. Valued rent 191,605*l.* Scotch. Annual value of real property in 1815, 409,983*l.*

5. *Renfrewshire*, a small maritime county, bounded on the south and south-west by the county of Ayr; on the east by Lanark; and on the north and west, by the Frith of Clyde. It contains 145,280 acres, of which about a half is arable. Surface agreeably diversified. There is a large extent of hilly, moorish ground, particularly in the western parts of the county, and along the confines of Ayrshire. From Port Glasgow eastwards, along the river Clyde, the country is comparatively flat. The soil in this, as well as in the other parts, is very various: in some places it is thin and sandy, but in others it consists of a deep, loamy clay, abundantly fertile; and, being well enclosed with hedges, and ornamented with gentlemen's seats and plantations, it has a rich appearance. There are several large estates, but property is notwithstanding a good deal subdivided. Farms middle-sized. Farmhouses and buildings of a medium quality. Though still rather backward, arable husbandry has been exceedingly improved; but the county is on the whole better calculated for grazing and dairying—the latter being extensively practised—than for tillage. Tile draining and the use of bone manure are rapidly extending; and the roads, which at the close of the American war were scarcely passable, except during summer and the frosts of winter, are now everywhere excellent. Average rent of land in 1810, 17*s.* 7*d.* an acre. Renfrewshire derives its principal importance from its manufactures and shipping. Paisley is, next to Glasgow, the principal seat of the Scotch cotton trade; and it has, also, considerable manufactures of silk, wool, &c. Manufacturing industry is extensively prosecuted at Pollockshaws, Neilston, and other places. Greenock and Port Glasgow, particularly the former, are important shipping towns; and besides that commerce and navigation, which may be regarded as native to themselves, are the places whence the greater part of the foreign trade of Glasgow is carried on. There are valuable coal mines near Paisley, and in the eastern parts of the county; and limestone and freestone are pretty generally diffused. Principal rivers, White Cart, Black Cart, and Gryfe. Number of parishes, 16. Renfrewshire returns 3 members to parliament, viz., 1 for the county and 1 each for the burghs of Paisley and Greenock. Renfrew and

Port Glasgow are associated with other burghs in the return of a member. Principal towns and population in 1831,—Paisley, 57,466; Greenock, 27,571; Port Glasgow, 5,192. Population of county in 1831, 133,443. Valued rent, 69,172*l.* Scotch. Annual value of real property in 1815, 265,534.

6. *Lanarkshire* or *Clydesdale*, an inland county, is bounded on the west and south by the counties of Renfrew, Ayr, and Dumfries; and on the east and north by Peebles, Mid Lothian, West Lothian, Stirling, and Dunbarton. It contains 604,800 acres, of which from a third to a half is supposed to be cultivated. Surface very various; in some places mountainous, in others hilly, and in others comparatively flat. The low grounds on both sides the Clyde, from Tintoc to Glasgow, slope gradually to the north-west, and, increasing in breadth as the river descends, occupy at its lower end nearly the whole width of the county. They embrace a large extent of fertile and moderately level, but finely diversified, country, interspersed with cultivated fields, thriving plantations, country seats, towns and villages. Climate, in the upper districts, sometimes very severe; in the lower, mild but humid. Lanarkshire is divided into three wards, upper, middle, and lower; each having a sheriff substitute to superintend its judicial concerns. The *Upper Ward*, of which Lanark is the principal town, comprises nearly two-thirds of the surface of the county; embracing all that extensive portion that lies between Peeblesshire on the east, Dumfriesshire on the south, and Ayrshire on the west. This tract consists, for the most part, of mountains, hills, and wide dreary moors, unsusceptible of improvement. The highest land is either in or contiguous to the parish of Crawford, where the Clyde has its source, adjoining Dumfriesshire and Peeblesshire. Coulter Fell, on the borders of the latter, is 2,440 feet above the level of the sea. The village of Leadhills, near Wanlock Head in Dumfriesshire, has an elevation of about 1,280 feet; and the range of the Lowthers, near Leadhills on the Dumfriesshire border, has, where highest, an elevation of 2,396 feet. Tintoc, on the confines of the hilly district between Biggar and Lanark, is 2,306 feet high. The arable land lies along the Clyde and the Douglas, but principally the latter; the strath becoming more and more extensive as the river advances in its course, and as its elevation becomes less. The *Middle Ward*, having Hamilton in its centre, is rather more than half the size of the Upper Ward. Its surface is comparatively level. There is a considerable breadth of low ground along the Clyde, whence it shelves irregularly to the highest ridge, on each side near the confines of the county; but these ridges, a few summits excepted, do not generally rise more than 700 feet above the level of the sea. The *Lower Ward*, occupying the north-west angle of the county, is of very inferior dimensions as compared even with the Middle Ward; but it is the most fertile, best cultivated, and, having the city of Glasgow within its limits, by far the most populous, rich, and important of the three. The soil of that part of the Upper Ward that is not absolute mountain, moor, or bog, is principally dry, light, and friable. In the Middle and Lower Wards, the soil is principally a retentive clay; but in parts it is loamy, sandy, gravelly, &c. About

three-fourths of the county belong to very large proprietors: remainder parcelled into comparatively small properties. Stock-farms large; tillage-farms of various sizes, but the greater number rather small. Farm houses and buildings greatly meliorated, and now equal to those in most improved districts. Agriculture in a pretty advanced state. Drainage, though essential, was long too much neglected; but it is now prosecuted with almost as much spirit as in Ayrshire. A good deal of wheat is raised in the Lower and Middle Wards; but oats is the principal corn crop, and next to it barley, or rather bear. Turnips extensively cultivated. The use of bone dust as a manure for raising turnips has been recently introduced into some of the least improved parishes in the county, and promises to be of infinite importance. Apples, pears, plums, &c., a species of crop but little known in other parts of Scotland, except in gardens, are raised pretty extensively in what is called the *Trough of the Clyde*, that is, on the low, flat lands on the banks of the river, principally between the lowest waterfall and the mouth of the South Calder. It is supposed that nearly 550 acres are occupied with orchards. The produce varies extremely in different seasons. In one year, the fruit produced from half an acre of land may sell for 150*l.*; but in other years it may produce little or nothing. (*Naismith's Clydesdale*, p. 132. ed. 1806.) There must of course be a good deal of market gardening carried on in the neighbourhood of Glasgow. The dairy system has been pursued for a lengthened period, and with much success in Lanarkshire. Ayrshire cows are the most common stock; and some farmers have from 15 to 30. Cheese mostly made to imitate Dunlop. The draught horses of this county are well known, and are held in high estimation all over the south of Scotland and the north of England. Mr. Naismith estimated the horses employed in agriculture in Lanarkshire, inclusive of the young ones not fit for labour, at about 8,000.—(*Survey*, p. 101.) And if this estimate was nearly accurate at the time (1806) when it was published, their number may now be safely estimated at from 9,500 to 10,000. Sheep, partly Cheviots, but mostly black-faced. Standing stock estimated by Mr. Naismith at 120,000; but we are informed that this estimate is at present under the mark. Plantations have been much extended in all parts of the county during the last 20 years. Average rent of land in 1810, 9*s.* 10*d.* an acre. This county is principally indebted for its great manufacturing and commercial prosperity to its almost exhaustless coal mines; some pits have been opened even within the suburbs of Glasgow, and coal is, perhaps, cheaper in that city than in any great town in the empire. It has also large supplies of ironstone; and it is estimated that no fewer than 48,000 tons of iron were produced in 1834, at the Clyde and Calder iron works, Wilsontown, Gartsherry, and other places in this county; the quantity having about doubled within the last half dozen years. The lead mines at Leadhills are the most productive in Scotland. Limestone and freestone abundant, and largely consumed. Glasgow is the first town of Scotland, and the third of Great Britain, in point of population. It is famous for its cotton and other manufactures, its extensive foreign trade, its university, and the magnificence of its streets and buildings. The Clyde is the chief of the rivers of this county, and of the west of Scotland; it has several tributary streams, some of them of considerable importance.—(See *antè*, p. 246.) The Forth and Clyde canal is partly, and the Monkland canal entirely, in this county. Lanarkshire contains 47 parishes. It returns 3 members to parliament, viz., 1 for the county, and 2 for the city of Glasgow. The boroughs of Lanark, Airdrie, and Hamilton join with Linlithgow and Falkirk in returning a member. Principal towns and population in 1831, Glasgow, 202,426; Hamilton, 9,513; Lanark, 7,672; Airdrie, 9,867. Population of county in 1831, 316,819. Valued rent, 162,132*l.* Scotch. Annual value of real property in 1815, 686,531*l.*

7. *Peeblesshire*, an inland county, is bounded on the south by the county of Dumfries; on the south-west by Selkirk; on the north and north-west by Mid Lothian, and on the east by Lanark. It contains 204,160 acres, of which a comparatively small portion only is arable.* The greater part of the surface consists of mountain, moor, and bog; but there is some fertile soil on the banks of the Tweed. The highest mountains are in the southern part of the county, in the parish of Tweedsmuir, where the Tweed has its source. They belong to the Hartfell group. The summit of Broadlaw rises 2,741 feet above the level of the sea at low water; this, which is about 100 feet above the altitude of Hartfell, is the highest elevation in the south of Scotland. The hills are generally smooth, and afford good, sound sheep pasture. In the low parts of the county, agriculture has been very much improved; but it is now pretty generally believed that tillage has been too much extended. The buildings on farms of any importance have been entirely renovated, principally within the last thirty years. The black-faced breed of sheep used, at no very distant epoch, to be diffused over the whole county, to the exclusion of every other; but, about 1795, Cheviots began to be introduced, and their numbers have so rapidly increased, that, even in the parish of Tweedsmuir, which is the wildest and most exposed, there are now 9,000 Cheviots, and only 7,000 black-faced sheep. The total stock of sheep at present in the county is estimated at 102,000. Property in a few hands; farms very large. Average rent of land in 1810, 5*s.* 7*d.* an acre. Neither minerals nor manufactures of any importance. Principal river, the Tweed. Peeblesshire contains 16 parishes, and returns a member to parliament. Peebles, the only town of any importance, had, in 1831, 2,750 inhabitants. At the same period, the population of the county was 10,578. Valued rent, 51,938*l.* Scotch. Annual value of real property in 1815, 64,182*l.*

8. *Selkirkshire*, an inland county, is bounded on the south by the county of Dumfries; on the east by Roxburgh; on the north by Mid Lothian; and on the west by Peebles. It contains 169,280 acres, of which hardly a tenth part is supposed to be arable. This county

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* According to the *General Report of Scotland*, the land in cultivation in Peebles amounts to 24,500 acres; but in the *New Statistical Account of Scotland* (No. III. p. 181.), the cultivated, or occasionally cultivated, land, is said to amount to 34,762 acres.

is in most respects similar to Peebles. The greater part of the surface is mountainous; but the hills are green and smooth to the very summits. St. Mary's Loch, and the adjoining Loch of the Lowes, in this county, the former about 7½, and the latter about 1½ miles in circumference, are among the largest lakes in the south of Scotland. There is some fertile ground in the valleys of the Tweed, the Yarrow, Ettrick, and other streams, but the extent is inconsiderable. Selkirkshire has fully participated in the wonderful improvements that have been made during the last half century in most parts of Scotland. Its agriculture, breeds of cattle and sheep, roads, buildings, food and clothes of the inhabitants, &c., have been all signally improved. The change is set in a very striking point of view, in the following remarks on the parish of Yarrow (*New Statistical Account of Scotland*, Selkirkshire, p. 57.), and which may be equally applied to the whole county: — "Since the date of the last statistical account, the Cheviot have superseded the black-faced sheep; and, with the breed, the management has been materially altered. There is no ewe-milking as formerly, and no *hog* hirsel kept, but the different parts of the stock roam promiscuously and at large. In very severe snow storms, the flocks on the higher grounds used to be removed to the low country of Annandale in quest of food; but now a store of hay is cut from the bogs, and forms ample winter provision for the sheep during any storm; while *stells*, or inclosures for sheep, at the same time, are more numerous and accessible. Within the last forty years, too, the country has been thoroughly drained. Equally great have been the improvements in the agriculture of the parish. The system of having out-field and in-field was long practised; the milk ewes and cattle being folded at night, and the ground thus manured for cultivation. Cropping, too, went on till the particular spot was exhausted. But now a better system prevails; the arable and meadow land being enclosed and subdivided, the two-horse plough used, turnip husbandry introduced, a regular rotation of cropping followed, and wheat, so long deemed unsuited to our soil and climate, frequently raised with success. The new houses of the tenants have, for the most part, been built in better style and situations than the old, which were small thatched cottages, placed generally on some sloping bank, or up some secluded burn, where security was sought in marauding times. The roads, also, have been greatly improved, and are far more frequented. Besides, all classes are better fed and clad. The dress is no longer of home produce or manufacture. What used to be the luxuries have become the necessaries of life; so that, instead of a single carrier on foot, as formerly, a number of carts supply the Yarrow Vale with wheaten bread. A solitary newspaper formerly made its passage up the water by slow stages, and through many hands, — contrasting forcibly with the regular and rapid circulation of periodicals at present. Withal, there has been a striking change in the habits of the peasantry. Local attachments have given way to general knowledge. The legends of superstition are in a great measure forgotten, and its rites forsaken. There is no longer 'heard a lilting at the ewes' milking,' or 'tales at the farmer's ingle.' The minstrel's strains, however, had lingered long after the deeds which they commemorated were over. In this pastoral district it was that Sir Walter Scott found many of the old ballads which had been handed down for ages as a patrimony from sire to son: but, on the publication of his 'Minstrelsy,' the spell that bound them was broken; and these relics of Border song, thus laid bare to the light of day, have, like the friendly and familiar spirits of Border superstition, on being noticed with peculiar kindness, entirely disappeared, and that, too, in consequence of the very effort made to preserve them. In this district, too, there existed almost a feudal relation between master and servant; there being instances in which the domestic has grown up and grown grey beneath the same roof: but now the half yearly term is too often one of change, and the stipulated service performed with mechanical unconcern." Average rent of land in 1810, 4*s.* 8*d.* an acre. The woollen manufacture has been introduced at Galashiels, and is carried on with spirit and success. Minerals of no importance. Principal rivers, Tweed and its tributaries, Yarrow and Ettrick. Selkirk contains 7 parishes, and returns 1 member to parliament. The county, in 1831, contained only 6,833 inhabitants; towns very small. Valued rent, 80,308*l.* Scotch. Annual value of real property assessed in 1815, 43,584*l.*

9. *Roxburghshire*, or *Teviotdale*, an inland county, is bounded on the south-west by the county of Dumfries; on the south-east and east by Cumberland and Northumberland; on the north by Berwick; and on the west by Mid Lothian and Selkirk. It contains 457,920 acres, of which about two fifths are occasionally under the plough. There is a great variety of surface. The low or arable lands in the valleys of the Tweed and the Teviot consist principally of a light turnip soil. The mountainous or pastoral district lies principally in the southern and south-eastern parts of the county, along the Dumfries, Cumberland, and Northumberland border. The highest land is found on the summits of Carterfell, and other points in the ridge of the Cheviots, on the east; and the Maiden Paps, Winniburgh Hill, &c., between the sources of the Teviot and the Liddle, on the south. The hills, like those in the contiguous counties, are mostly smooth, dry, and well covered with good sheep pasture. The Eildon hills, near Melrose, in the low country, are 1,634 feet above the level of the sea. Property mostly in large estates; but there are several of the smaller class of proprietors. Farms generally large, and some farmers frequently hold three or more farms. Arable husbandry is as well understood and practised in the lower parts of Roxburghshire as in any part of Berwickshire, Northumberland, or East Lothian. This county is also celebrated for its having been the theatre where some of the principal improvements in modern farming were first introduced, and where others were first successfully practised in Scotland. Mr. Dawson, the great improver of Scotch husbandry, occupied the farm of Frogden, near Kelso, in this county; and in it, *soon after* 1760, *he set to work the first plough drawn by 2 horses, driven by the ploughman, that was ever seen in Scotland!* And if Mr. D. was not the first to set the example of raising turnips, he was the first practical farmer by whom they were profitably cultivated on a large scale. — (*Survey of Roxburgh*, pp. 69. 90.) Fanners for dressing corn

were also made and used in this county before they were seen in any other part of Scotland. — (*Survey*, p. 59.) Large quantities of wheat are now produced. Cattle a mixed breed. Sheep principally Cheviots. Within the last 20 years many important improvements have been effected in this district. A large extent of land, that was entirely pastoral, now bears luxuriant crops; bone manure has been introduced; agricultural management has been materially amended; a good deal of waste land has been planted; farm houses and buildings have, in numerous instances, been rebuilt on approved plans; thrashing machines have been erected on most considerable farms; and the habits and accommodations of the people have been materially improved. — (*New Statistical Account of Scotland*, article Roxburgh, pp. 23, 33, 40, 125, &c.) There are some very productive orchards in the neighbourhood of Jedburgh, Melrose, and Kelso. During the American war tobacco was extensively cultivated. Average rent of land in 1810, 10*s*. an acre. If we except marl, of which there are vast quantities in several parts of the county, minerals are of no importance. Various branches of the woollen manufacture have been introduced into Roxburghshire; and are prosecuted with considerable vigour at Hawick and Wilton, and in a lesser degree at Jedburgh, Melrose, and Kelso. The parish of Kirk Yetholm, in this county, is celebrated as being the residence of the largest colony of gipsies in Scotland. Principal rivers, Tweed, Teviot, Gala, Leader, &c. Roxburgh contains 31 parishes; and returns 1 member to parliament for the county. Jedburgh joins with other burghs in choosing a representative. Principal towns and population in 1831, — Jedburgh, 5,647; Kelso, 4,939; Hawick, 4,970; Melrose, 4,339. Population of county, in 1831, 43,663. Valued rent, 314,663*l*. Scotch. Annual value of real property in 1815, 254,180*l*.

10. *Berwickshire*, a maritime county, is bounded on the north and north-east by East Lothian and the North Sea; on the south-east, south, and west, by part of England, Roxburghshire, and Mid Lothian. It contains 282,880 acres, of which from a third to a half is supposed to be arable. That part of the county which lies between the Leader on the west, the Tweed on the south, and the foot of the Lammermoor range of hills on the north, is called the Merse. It is comparatively level, sloping gently to the south-east; and, having in most parts, a deep, fertile, clayey soil, and a dry, warm, early climate, it is particularly well calculated for tillage husbandry. The Lammermoor district consists principally of high, cold, bleak, moorish ground; but valleys are occasionally interspersed, the soil of which is comparatively fertile. Mr. Kerr (*Survey of Berwickshire*, p. 17.) having taken the extent of the county, inclusive of Berwick township, at 290,120 acres, distributes it as follows: —

	Acres.
Lowlands of the Merse	100,226
Ditto in Lauderdale	7,280
Ditto of Cockburnspath	2,200
Berwick township	4,680
Total arable, improved, or improvable	114,386
Hill lands of Lammermoor and Lauderdale	175,734
Total	290,120

The Merse is one of the best farmed districts in the empire. No very large estates; but property, notwithstanding, in a few hands. In 1808 (and there has been no material change in the interim), the total number of proprietors was estimated at 292; but, of these, 160 possessed property under 100*l.* a year (Scotch) of valued rent, being provincially called pendiclers, feuars, &c. Farms large; farm buildings generally very good. Steam power is employed in several thrashing mills in this county. Farmers intelligent, active, and enterprising. All the principles and processes of the most improved systems of arable and stock husbandry are well understood, and systematically practised. Wheat and turnips are the great objects of culture, but barley and oats are raised in large quantities; beans also are cultivated to a considerable extent. Many improvements have been effected during the last twenty years, by the more complete drainage of the land, the adoption of rotations better suited to its varying capacities, the introduction of bone manure, the culture of waste land, &c. Horses principally of the Clydesdale breed, and in general strong and active. It was supposed that there were in 1809 about 4,500 *draught* horses kept in the county, and that about 6,000*l.* went annually from it to the west of Scotland for horses to keep up the stock. — (*Kerr's Survey*, p. 405.) At present we are assured the stock of draught horses may be estimated at 5,500. A pair is considered sufficient for from 40 to 50 acres of tillage land; and, as about a half of all tillage farms is in grass, the draught horses are usually in the proportion of a pair to each 100 acres of land in the farm. Cattle a mixed breed; and a good deal of attention has latterly been paid to its improvement, by the introduction of short-horned bulls and otherwise. In the Merse the sheep are principally long-woolled: in the Lammermoor hills the Cheviots have been extensively introduced; but, in the bleakest and worst parts, the black-faced breed, or a cross between them and the Cheviots, keep their ground. The total stock of sheep may be estimated at about 115,000. Average rent of land in 1810, 16*s.* 5*d.* an acre. Roads pretty good, but difficult to keep in repair, and, when not in order, they are very heavy. Minerals and manufactures quite unimportant. Principal rivers, Tweed, Whittader, Blackadder, and Leader. The salmon fisheries on the Tweed are among the most valuable in the empire; though here, as in most other places, there has, within the last few years, been many complaints of a scarcity of fish. Produce principally sent to London. Berwickshire contains 33 parishes. The county returns 1 member to parliament. The town of Berwick returns 2 members; but it is an English more than a Scotch town. The borough of Lauder unites with Haddington, Dunbar, North Berwick, and Jedburgh, in sending a member to parliament. Towns quite inconsiderable. Dunse, inclusive of the parish, only contains 3,496 inhabitants. Population of county in 1831, 34,048. Valued rent, 178,366*l.* Scotch. Annual value of real property in 1815, 245,379*l.*

11. *East Lothian*, or *Haddingtonshire*, a maritime county, is bounded on the north, north-east, and north-west by the North Sea and the Frith of Forth; and on the south, south-east, and south-west, by Berwickshire and Mid Lothian. It is of small size, containing only 174,080 acres, of which about four fifths are arable, or fit for

cultivation. The part of Lammermoor which belongs to this county, though not nearly so extensive as that which belongs to Berwickshire, has the same character. But, with this exception, most of the county is comparatively level; and, when viewed from the summit of the Lammermoor hills, has the appearance of an extremely rich and beautiful plain, gradually declining to the sea. The surface of the low ground is, however, considerably diversified, North Berwick-law, so called from the village of that name to which it is contiguous, is an insulated hill of considerable height; and there are some other detached hills, though of no great importance. Along the coast the soil is a rich light reddish loam; it gradually varies to clay towards the upper districts, and its general character is that of a clay bottom. The lower grounds are not surpassed, in point of productiveness, by many spots in the kingdom. The moorish districts occupy between a third and a fourth part of the surface of the county. Easterly winds are prevalent, and severe in April and May; but the climate is, notwithstanding, reckoned healthy, at the same time that it is dry and early. The whole property of this county was divided, in 1811, in very unequal portions, among 183 proprietors; of whom about a half possessed estates under 100*l.* a year of valued rent. We understand that the number at present is not materially different. Nearly half the county is entailed. Farms rather above the middle size. At an average, they are supposed to amount to from 300 to 500 acres over the whole of the arable land; but they are smaller, perhaps, on the best soils, and larger on the inferior. They are almost universally let on lease for 19 or 21 years; and rents, though payable in money, are generally determined by the price of corn. Tillage husbandry has been carried to a very high pitch of perfection. "Turnip husbandry, in this county, far surpasses that which is to be found in any part of England, not only as to the management, but with reference also to the quality of the turnips. The latter effect must chiefly arise from the richness of the soil; the turnips are remarkably large, and are found to be much sounder than in any other part of the United Kingdom, they being never at a loss for proper nourishment, and being continually kept in a growing state." — (*Kennedy and Grainger on the Tenancy of Land*, vol. i. p. 220.) Barley is but little grown. Wheat is the grand object of attention; but considerable quantities of oats and beans are also raised. The rotation on the coast is, 1st, turnips; 2d, wheat; 3d, clover; 4th, wheat; 5th, beans; 6th, oats: on the clay land the wheat is generally fallowed for, and the rotation is, 1st, fallow; 2d, wheat; 3d, seeds; 4th, oats; and sometimes, 5th, beans; but, if a crop of beans be taken, a little dung is always laid upon the land. Tenants are compelled to keep during their lease, and to leave, at its expiration, a certain extent of land, in fallow or green crop, and a certain extent in seeds and in corn. They are strictly prohibited from taking two white crops in succession. Seaweed is extensively used as a manure along the coast. Lime is liberally applied to the clay land; but the manure most generally used, and on which most dependence is placed, is that of the farm-yard. Latterly, however, bone manure has been much employed in the raising of turnips. The greater number of the principal Scotch farmers and improvers have either belonged to, or been in some way connected with, this county. The practice of fallowing was introduced here about 1720; and was extensively practised many years before it obtained any footing in any other part of Scotland.—(*Survey of East Lothian*, p. 92.) But, excepting on the heavy clay lands, the turnip husbandry has gone far to supersede fallows. There can be no doubt, however, that the culture of corn has been carried to an excess in this county; and that the land has been *unduly forced*. Its fertility has, in fact, been a good deal impaired: there have recently been several failures in the wheat crops; and its farmers have suffered more since the peace, than those of any other Scotch county. These defects in the management are now, however, begun to be obviated by keeping a greater extent of land in grass, and for a longer time. Farm buildings generally extensive and commodious. The implements are all of the most improved description, and there is not a farm without a thrashing mill, many of which are now wrought by steam power. It may, however, be worth remarking, as evincing the rapidity with which improvements of all sorts have been diffused, that two horse ploughs were not introduced till about 1772; nor were they in general use till about 1780. Stock husbandry, though still a secondary object, has been a good deal extended within these few years, in consequence of the increase of pasture land. Comparatively few cattle and sheep raised; but large numbers are purchased to be fattened on turnips, straw, and hay, for the Edinburgh market. The value of the low land in this county has advanced since 1770 in a most extraordinary ratio. At present it fetches as high a rent as is brought by the very finest lands in most other districts of the kingdom. The following statement, taken from the article on the parish of Dirleton, in the New Statistical Account of Scotland, may be applied to the whole county. "It cannot be doubted, that since the date of the former statistical account of this parish, its condition has improved. The soil is more effectually drained; green crops are more extensively raised; live stock is more carefully attended to; many of the fields are better sheltered; the general system of management is less slovenly, and, compared with the amount of produce, less expensive. Steam power, in farm operations, was then unknown; it is now employed every year more and more extensively, and, as is universally allowed, with much advantage. The spirit of enterprise is more active amongst the farmers; the labourers are more alert and skilful in their several departments; and all the implements of husbandry are in a state of greater efficiency. Within the last few years, even the science and practice of agriculture have made considerable advances; and there is at present (1837) an evident tendency towards still further improvement." Average rent of land in 1810, 20*s.* 10*d.* an acre. The western part of the county is well supplied with excellent coal; and limestone is very generally diffused. With the exception of some considerable distilleries, there are few manufactures of any importance. A good deal of salt used to be made at Prestonpans, but, since the abolition of the duties, the works have rapidly declined. The county sends a member to parliament; and the burghs of Haddington, Dunbar, and

North Berwick, join with Lauder and Jedburgh in returning a representative. The Tyne is the only river of consequence. There are 24 parishes. Principal towns and population in 1831, — Haddington, 5,883; Dunbar, 4,735; Tranent, 3,620. Population of county in 1831, 36,145. Valued rent, 168,874*l.* Annual value of real property in 1815, 250,126*l.*

12. *Mid Lothian* or *Edinburghshire*, a maritime county, is bounded on the north by the Frith of Forth; on the east, by the counties of East Lothian, Berwick, and Roxburgh; on the south, by Selkirk, Peebles, and Lanark; and on the west, by West Lothian. It contains 226,560 acres, of which nearly two thirds are susceptible of cultivation. In some parts the surface is hilly, and in others almost mountainous. The highest point in the Pentland ridge is 1880 feet above the level of the sea. This ridge divides the lower grounds of the county into two comparatively level tracts, that unite towards the sea. Clay soil predominates; and there are few parts of the county remarkable for natural fertility. There are a considerable number of rather large estates; but property is, on the whole, well divided. Farms of various sizes. Agriculture similar, but inferior, to that of East Lothian; and it is a good deal modified by the demand of the capital for potatoes, milk, &c. Wheat, the principal object of the farmer's attention; and there may be, at present, from 15,000 to 18,000 acres under this crop. There has, in this respect, been a wonderful change within the last century. In 1727, a small field of 8 acres, within a mile of Edinburgh, sown with wheat, was so extraordinary a phenomenon as to attract the attention of all the neighbourhood! — (*Robertson's Rural Recollections*, p. 267.) The breadth of land now under wheat is believed to be more than double what it was in 1790; and, during the interval, the crops have been materially improved. A good many Ayrshire cows are kept for the supply of the metropolis with milk, butter, &c. Average rent of land in 1810, 24*s.* 6*d.* an acre.

Edinburgh, the ancient metropolis of Scotland, is situated in the northern part of Mid Lothian, near the sea. Its situation is peculiar, and at the same time extremely interesting and romantic. The old town, with its high houses, narrow *wynds*, its antique castle and palace, strikingly contrasts with the broad rectangular streets and modern mansions of the new town. Edinburgh is famous for its university, and for its superior literary and philosophical society. With the exception of printing, shawl making, and coach building, which are successfully carried on, the manufactures of Edinburgh are of no great importance. Leith, which may be called the port of Edinburgh, is now almost connected with the latter. It labours under the disadvantage (which attempts have been unsuccessfully made to obviate) of having a bad harbour; and from its not having any extensive connection by means of canals, railroads, &c. with any great manufacturing district, its trade is comparatively trifling. Edinburgh is well supplied with fuel. There are large beds of coal at Dalkeith, within 6 miles of the city, to which a railroad has been constructed; and it also derives a supply from a greater distance by the Union Canal, stretching from the city to Falkirk. Principal rivers, North and

South Esk, Almond, and Water of Leith. Exclusive of Edinburgh, Mid Lothian contains 27 parishes. It returns 4 members to parliament, viz., 1 for the county; 2 for the city of Edinburgh; and 1 for the burghs of Leith and Musselburgh. Population of Edinburgh in 1831, 130,301; Leith, 25,855; Musselburgh, 8,961; Dalkeith, 5,586. Population of county in 1831, 219,592. Valued rent, 191,054*l.* Scotch. Annual value of real property in 1815, 770,875*l.*

13. *West Lothian*, or *Linlithgowshire*, a small maritime county, bounded on the north by the Frith of Forth; on the east and south-east, by Mid Lothian; and on the west and south-west by Stirling and Lanark. It contains 76,800 acres, of which about three fourths are arable. Surface varied with knolls, but there are but few hills, and no mountains; soil clayey, sandy, and gravelly. There is a considerable extent of thin moorish ground, and some morasses, in the south-western parts of the county, contiguous to Lanarkshire. Climate rather cold. Agriculture similar to that of Mid Lothian; with this difference, that more turnips are raised, and fewer potatoes. Some horses are bred, and also a good many cattle. Property in a few hands: farms of a medium size. Average rent of land in 1810, 21*s.* 7*d.* an acre. Coal is found in most parts of the county, particularly in the vicinity of Borrowstonness, as are also limestone and freestone. Manufactures, if we except a little shipbuilding, unimportant. Principal rivers, Almond and Avon. It contains 13 parishes. A member is returned to parliament for the county; and the boroughs of Linlithgow and Queensferry join with others in returning representatives. Principal towns and population in 1831, — Linlithgow, 4,874; Bathgate, 3,593; Borrowstonness, 2,809. Population of county in 1831, 23,291. Valued rent, 75,019*l.* Scotch. Annual value of real property in 1815, 97,597*l.*

14, 15. *Stirlingshire*, including the small county of *Clackmannan* a maritime district, is bounded on the east by Linlithgowshire, the Frith of Forth, Fife, and Perthshire; on the north, by the latter; on the west, by Loch Lomond and Dunbartonshire; and on the south, by the latter and Lanarkshire. Stirling contains 321,280 acres, or, deducting water, 312,960 acres, and Clackmannan 30,720, about two thirds of the whole being arable. Surface exceedingly diversified, consisting partly of high mountains; partly of extensive moors, bogs, woods, &c.; and partly of very rich alluvial carse lands. Ben Lomond, the most celebrated and best known of the Highland mountains, is situated in the north-west part of Stirlingshire, immediately above Loch Lomond. It has an altitude of 3,191 feet. The Fintry, Campsie, and Lennox hills lie in the middle and southern parts of the county: the surface, from Denny north-west, to Loch Lomond, is in most places very bleak and sterile. The Ochill hills encroach on the northern parts of Clackmannan. The low alluvial lands, which are extremely productive, lie on both sides the Forth. On the south they extend from Falkirk to above Stirling; and on the north they extend all along the southern boundary of Clackmannan. They are supposed to comprise in all from 45,000 to 50,000 acres. The soil of the carse principally consists of a bluish clay, intermixed with sand. In the western parishes clay soil predominates, and, as it rests on a bottom of hard ferruginous clay (*till*), it is cold and wet. In some places along the rivers the soil is light and gravelly. In the high moors it is mossy; and in the lower grounds there are considerable peat bogs. Several large estates; but property a good deal divided. Farms in the lower districts vary from 20 to 300 acres; but, in the hilly and mountainous districts, they are much larger. Agriculture very various; but generally well suited to the situation and climate. Drainage has recently been practised on a very extensive scale. In the carse, wheat, beans, barley, and clover, but particularly the first two, are the principal crops. On the lighter lands, turnips are largely cultivated; oats being the prevailing crop on all the poorer high lands. Potatoes generally cultivated. Sheep mostly of the black-faced Linton breed; but Cheviots have been largely introduced. Besides the cattle bred in the county, which are not remarkable for their goodness, great numbers of Highland cattle are annually purchased for feeding at the Falkirk *trysts*. These are the greatest fairs or markets for cattle of any in Scotland. They are held on the 2d Tuesday of August, September, and October; the last being the largest. Cattle in all sorts of condition are brought to them from all parts of Scotland, but principally from the north; as are also sheep and horses. At an average, it is supposed that about 80,000 cattle, 50,000 sheep, and 5,000 horses, are annually disposed of at these trysts. Estimating the cattle to be worth 7*l.* each, the sheep 11*s.* and the horses 10*l.*, their entire value will be nearly 650,000*l.* — (*Youatt on Cattle, &c.* p. 121.) Stirlingshire is said to have about 13,000 acres of natural wood, and above 10,000 acres of plantations. The eastern parts of Stirlingshire, and the whole of Clackmannan, have a finely diversified appearance; and in point of extent, variety, and magnificence, the view from Stirling Castle is, perhaps, unequalled by any other in Britain. Coal abundant; and there are large supplies of ironstone, freestone, &c. Average rent of land in 1810, 12*s.* 2*d.* an acre. Extensive works have long been established at Carron, for the smelting of iron, and the manufacture of all sorts of cast-iron goods, whether for civil or warlike purposes. The species of cannon, called *carronades*, derived their name from having been first manufactured at Carron. Exclusive of distilleries, some branches of manufacture, on a pretty considerable scale, are carried on at St. Ninian's, Stirling, Falkirk, and other towns. Principal river, Forth; to which are tributary the Carron, Bannockburn, and other small streams. Stirling and Clackmannan contain 30 parishes. Stirlingshire returns 1 member to parliament. Clackmannanshire unites with Kinross-shire and part of Perthshire, in returning a member. The borough of Stirling unites with the boroughs of Inverkeithing, Dunfermline, Queensferry, and Culross; and the borough of Falkirk with those of Linlithgow, Lanark, Airdrie, and Hamilton, in returning representatives. Principal towns and population in 1831, — Stirling, 8,340; Falkirk, 12,743; St. Ninian's, 9,552; Alloa, 6,377. Population of Stirling county in 1831, 72,621; of Clackmannan, 14,729. Valued rent of Stirling, 108,509*l.*; of Clackmannan, 26,483*l.* Scotch. Annual value of real property in Stirling, in 1815, 218,761*l.*; Clackmannan, 37,978*l.*

16. *Fife*, a maritime county, comprising the peninsula lying between the Frith of Forth on the south, the German Ocean on the east, and the Frith of Tay on the north; on the west it is bounded by the counties of Perth, Kinross, and Clackmannan. It contains 300,800 acres, of which more than two thirds are cultivated. Surface finely diversified. The highest summit of the Lomond hills, on the eastern border of Kinross-shire, is 1,721 feet above the level of the sea. The eastern and south-eastern parts of the county are comparatively level and fertile. The extensive strath watered by the Eden, having Cupar in its centre, popularly called the *How of Fife*, is also, in most places, level and rich. The moory and least valuable land lies mostly in the western parts of the county along the eastern and southern confines of Kinross-shire, particularly between the latter and Dunfermline and Burntisland. There is some hilly ground in the north along the Frith of Tay, but it is broken by many fruitful vallies. Soil very various. In the most fertile districts it consists principally of a rich loam; in the poorer districts it is mostly clay, resting on a cold *till* bottom; but, besides these, there is every variety of soil. Climate dry and good; having been materially improved by drainage and cultivation. On the whole, Fife may be justly regarded as one of the best of the Scotch counties. It is well cultivated, has a more than usual proportion of country seats and plantations, and its coast is thickly studded with villages and towns. Pennant is quite enthusiastic in his admiration of this county. "Permit me," says he, "to take a review of the peninsula of Fife, a county so populous that, excepting the environs of London, scarcely one in South Britain can vie with it: fertile in soil, abundant in cattle, happy in collieries, in ironstone, lime, and freestone; blest in manufactures; the property remarkably well divided; none insultingly powerful to distress and often depopulate a county; most of the fortunes of a useful mediocrity. The number of towns is, perhaps, unparalleled in an equal tract of coast; for the whole shore from Crail to Culross, about 40 English miles, is one continued chain of towns and villages." — (*Tour in Scotland*, 1772, Part II. p. 212.) Farms of various sizes, from 50 to 500 acres. Farm buildings vastly improved within the last 40 years. Previously to 1790, the farmers generally lived in low, smoky houses, badly lighted, and without any apartments, or divisions, except those made by the furniture; the offices being at the same time mean and deficient in the extreme. But, since then, the farm buildings have been almost entirely renovated; and the farm-houses and offices will now bear to be compared with those of any other county. Drainage has been conducted in Fife on a very large scale; and has done much to improve the appearance of the country, and to increase its productiveness. Several pretty extensive lakes, or lochs, that occupy prominent places in the maps of the county published 30 or 40 years ago, are now completely drained, and bear the finest crops. This also has been the case with large tracts of low, swampy ground. More recently, furrow-draining has been prosecuted with great vigour and success. Agriculture has made corresponding advances; but it may still be a good deal improved, at least in the western parts of the county. Wheat and barley are largely cultivated, but oats is the principal crop. Turnip

culture much extended; barley, beans, and potatoes extensively grown. "By the new system of agriculture, and especially by the liberal employment of draining, the land has been brought into the highest state of cultivation; and, grounds, which 40 years ago would have been thought good for nothing, are now seen waving with the richest harvests. The houses of the peasantry are now equal to what those of the farmers were then; and the mansions of the latter surpass, both in appearance and comfort, such as the smaller proprietors formerly possessed. The condition of the people is much improved. Tea has become a new article of consumption. Their superior clothing forms another striking proof of the improvement of the peasantry." (*New Statistical Account of Scotland*, Fifeshire, p. 294. and p. 314.) Fife has long been celebrated for the excellence of its breed of cattle. In 1800 there were supposed to be about 10,000 milch cows in the county. Sheep not very numerous; but recently a good many have been slaughtered at Kirkcaldy, and sent by steam to London. The old breed of horses was small, unsightly, and ill fitted for the saddle or draught; but it has been much improved. Pigeon-houses numerous. Coal very abundant; as are limestone and freestone. Average rent of land in 1810, 22*s.* 5*d.* an acre. Several branches of the linen manufacture are carried on with much spirit, particularly that of table linen at Dunfermline. Fife contains 61 parishes, 13 royal burghs, and a university, St. Andrew's, the oldest in Scotland. It may be said to return 4 members to parliament; viz. 1 for the county; 1 for the boroughs of Cupar, St. Andrew's, East and West Anstruther, Crail, Kilrenny, and Pittenweem; 1 for those of Dysart, Kirkcaldy, Kinghorn, and Burntisland; and 1 for those of Inverkeithing, Dunfermline, Queensferry, Culross, and Stirling: the last 2 boroughs being the only ones not belonging to the county. Principal rivers, Eden and Leven. Principal towns and population in 1831, — Dunfermline, 17,068; Dysart, 7,104; Cupar, 6,473; Kirkcaldy, 5,034. Population of county in 1831, 128,839. Valued rent, 363,192*l.* Scotch. Annual value of real property in 1815, 405,770*l.*

17. *Kinross-shire*, a small inland county, to the west of Fife, being entirely surrounded by that county and Perthshire. It contains 50,560 acres, of which 4,480 are water, consisting principally of Loch Leven. Surface varied. In the lower district, to the north and west of the lake, the soil is clayey, sandy, and tolerably fertile; but in the more elevated parts it is unproductive, being mostly moorish and mossy. Agriculture much improved; but, owing to the backwardness of the climate, it labours under great disadvantages. Property very much subdivided; and mostly occupied by resident owners (feuars of the estate of Kinross). Oats principal crop. There is one large distillery; and cotton is woven at Kinross and Milnathort, on account of the Glasgow manufacturers. It has limestone and freestone quarries, but is destitute of coal. Average rent of land in 1810, 9*s.* 10*d.* an acre. Principal rivers, Leven, and North and South Queich. The level of Loch Leven has been recently reduced by a cut made for that purpose: but the undertaking promises, it is said, to be rather unprofitable. Kinross and Milnathort are the only towns. Parishes, 7. Kinross-shire unites with Clackmannanshire, and certain parishes in

the south-western part of Perthshire, in returning a member to parliament. Population of county in 1831, 9,072. Valued rent, 20,193*l.* Scotch. Annual value of real property in 1815, 25,805*l.*

18. *Dunbartonshire*, a maritime county, having its main body bounded on the north by Perth; on the east by Loch Lomond and Stirling; on the south by Lanark and the river Clyde; and on the west by Loch Long and Argyleshire. But, in addition to this, there belongs to it a small tract of country lying on both sides the Forth and Clyde canal from Kirkintilloch to Cumbernauld. It contains 165,760 acres, of which 19,840 are water. The greatest part of the county consists of lofty mountains, incapable of cultivation. The arable lands, which are of comparatively limited extent, lie principally along the Clyde, east of Dunbarton, on both sides the Forth, and on the south side of Loch Lomond. Soil of the arable land principally clay. Climate moist and changeable. There are many highly picturesque situations in this county, principally on the banks of Loch Lomond and the Clyde. The contrast between its high sterile mountains, and the beauty and fertility of the low ground, is very striking. There is a great deal of natural wood, and a good many plantations. Property in a few hands. Farms of all sizes. Excellent wheat is raised in the low grounds along the Clyde, and in the parishes of Old and New Kilpatrick; but oats is by far the most common crop. Cattle generally of the small Highland breed, and not remarkable for their quality; but Ayrshire cows are now met with, to the nearly total exclusion of every other variety, in all the dairy farms in the lower parts of the county. Sheep originally of the small mountain breed; but the black-faced Tweedale breed, and, still more recently, Cheviots, have been widely diffused. Average rent of land in 1810, 7*s.* 10*d.* an acre. Dunbartonshire produces coal, iron, freestone, and limestone. There are extensive printfields on the Leven; some cotton-mills have been erected; and glass making, paper making, &c. are carried on to a considerable extent. The Leven is the only river of importance. Parishes, 12. The county returns a member to parliament; and the burgh unites with Renfrew, Rutherglen, Kilmarnock, and Port Glasgow in returning a representative. Dunbarton burgh had in 1831 a population of 3,623, and the county of 33,211. Valued rent, 33,328*l.* Scotch. Annual value of real property in 1815, 71,587*l.*

19. *Argyleshire*, a very extensive maritime county, consisting partly of mainland and partly of islands. It is bounded on the south and west by the Frith of Clyde, the Irish Sea, and the Atlantic Ocean; on the east by Dunbarton and Perth; and on the north by Inverness. It is supposed to contain 2,054,400 acres, of which 1,446,400 are mainland and 608,000 islands. The fresh water lakes in the mainland and islands are supposed to cover 51,840 acres. The shores of the mainland, to which our attention is at present confined, are deeply indented with bays and arms of the sea, and it consists, in great part, of long narrow promontories, of which Cantire is the most remarkable. Surface almost every where rugged; and in many places, but particularly in the northern districts, contiguous to Inverness-shire and Perthshire, it is mountainous, wild, and dreary in the extreme. Cruachan Ben, at the head of Loch Awe, has an elevation of 3,670 feet

But some fertile valleys are interspersed between the mountains, and lie along the rivers and arms of the sea. The entire extent of the arable land of the mainland part of the county is not, however, supposed to exceed 170,000 acres. Soil very various: in the low grounds along the sea and rivers it is most usually a light loam, mixed with sand and gravel; on the sides of the hills, the prevailing soil is gravel on a till bottom. The mountains are generally rugged; their summits consist of bare barren rocks, and their sides are in part covered with strong heath. There are also large tracts of marshy and mossy ground. Natural woods and plantations supposed to cover from 35,000 to 45,000 acres. Some of the Dukes of Argyle have been very extensive planters; and the size and magnificence of the trees at Inverary are well known. Climate wet, boisterous, and very ill fitted for the ripening and harvesting of corn. Property in 1805 divided among 156 individuals; and, owing to the sale in the interval of large portions of the principal estate in the county, the number at present is probably greater. There is an extreme diversity in the size of farms; some comprising only a few acres, while others extend over several square miles. In various districts, the practice that formerly prevailed in most parts of the Highlands of holding land in a sort of partnership, or in what is there called *run-rig*, is still kept up. Under this system a number of persons take a farm in common, each being bound for the rent. They then divide the arable land into small contiguous portions, or ridges, as equally — quantity and quality taken together — as is possible; the share of each tenant being determined by lot, sometimes for the whole lease, but sometimes only for a single season! Ploughing and most other sorts of labour are performed in common; and, if there be any hill pasture attached to the low ground, it also is occupied in common. In some of the low Highland districts, held in this way, the extent of land falling to the share of each tenant does not exceed from 3 to 7 acres. It is needless to enlarge on the pernicious influence of this mode of holding land. Where it prevails, it is obvious their can be nothing like industry, nor any thing deserving the name of agriculture. We are glad, therefore, to have to state that it is every where declining, partly in consequence of the extension of the sheep-farming system, and partly by several of the landlords hostile to that system having, notwithstanding, divided the lands held in common, or in *run-rig*, into separate possessions. Still, however, it is but too prevalent, not only in Argyle but in most other Highland counties. Farm-houses and buildings differ as widely as the size of farms. The principal farmers and storemasters occupy substantial, comfortable houses; and the offices on their farms are good and suitable for the purposes in view. But, speaking generally, the houses of the smaller class of occupiers and cottagers are miserable hovels. The walls, which are low, sometimes consist of dry stone and sometimes of turf. They are thatched either with straw or heath; but, in general, so insufficiently that they afford a very inadequate protection from the rain: in some instances they are without chimnies. On some estates, however, the landlords have laudably exerted themselves to improve the cottages; and it is to be hoped that the example they have set may be generally followed. Principal crops, oats and potatoes. The culture of the latter has been rapidly extended. "Here," says Dr. Smith, "potatoes may be well said to be the *staff of life;* for most of the inhabitants live mostly upon them for more than three fourths of the year." — (*Survey of Argyle*, p. 92.) Implements greatly improved, but still in many places very imperfect. Ploughing indifferently executed; and a good deal of work done with the spade. Formerly the county was almost inaccessible, from the want of roads; but in this respect a vast improvement has taken place within the last 40 years. More recently, steam navigation has powerfully contributed to promote an intercourse with Argyle, and to open a ready market for its products. The Crinan canal, by obviating the necessity of the lengthened navigation round Cantire, has done much to facilitate the communication between Glasgow and the North-west Highlands. This county is celebrated for its excellent breed of black cattle. They are hardy, feed easily, and afford, when fattened in the low grounds of Scotland or England, excellent beef. The stock is estimated at about 65,000, furnishing a large annual supply for the south. Formerly the breed of sheep was much neglected; but for some years past its improvement has been an object of primary importance, and Cheviots have been extensively introduced. Average rent of land, including islands, in 1810, 1*s.* 11*d.* an acre. The herring fishery used formerly to be prosecuted with great success in Loch Fyne, and some other parts of the Argyleshire sea; but of late years it has greatly declined. Lead, copper, and iron are met with. Coal is wrought near Campbeltown; and the best slates in Scotland are obtained from the quarries in the small island of Easdale, and at Balachulish near Loch Eil. There are no large rivers; that of Awe is the most considerable. Argyle is popularly divided into various districts, of which Cantire, Knapdale, Argyle, Lorn, Appin, and Cowall are the principal. It contains 50 parishes. It sends 1 member to parliament for the county; and Campbeltown, Inverary, and Oban join with Ayr and Irvine in returning a member. Campbeltown burgh had, in 1813, a population of 4,869; and the county, of 100,973. Valued rent, 149,596*l.* Scotch. Annual value of real property in 1815, 227,493*l.*

20. ***Perthshire***, one of the largest and most important of the mainland Scotch counties, is bounded on the south by Dunbarton, Stirling, Clackmannan, the Frith of Forth, Kinross, and Fife; on the east, by the Frith of Tay and Angus; on the north, by Aberdeen and Inverness; and on the west, by Argyle. It contains 1,688,320 acres, of which 32,000 are water. This great county comprises within itself almost all that is peculiar to, or characteristic of, Scotland. It has every variety of surface and soil, from lofty rugged, sterile mountains to low, level, fertile vales. Its scenery is beautifully diversified. Its lakes and rivers are on a grand scale; and while, in parts of their course, the latter rush forward with the impetuosity of a mountain torrent, in others they creep sluggishly along, expanding into large æstuaries before they reach the sea. The climate is equally various, being mild and early in the vales, and severe and backward in the more elevated regions. Agriculture, in some parts, is highly improved and flourishing; but elsewhere the worst practices of a former age maintain their ascendancy. The Celt is found on the mountains, and

the Saxon on the plains, presenting, in language, dress, and manners, the most striking contrast. Perthshire was formerly divided into the districts of Gowrie, Perth, Stormont, Strathearn, Menteith, Breadalbane, Balquhidder, and Rannoch, each of which was subjected to a particular sheriff or stewart; but the act of 1748, abolishing hereditary jurisdictions, put an end to these divisions in a legal sense, though they are still frequently referred to. It is naturally divided into highlands and lowlands: all the country, including the Ochill and Sidlaw hills, from its southern frontier to the foot of the Grampians, being included in the lowlands, and the remainder in the highlands. The part of the Grampian chain in this county comprises some of the highest mountains in Scotland. Ben Lawers, 3,945; Ben More, 3,944; Ben Gloe, 3,690; Schiehallion, 3,550; Ben Achonzie, 3,028; and Ben Ledi, 2,863 feet above the level of the sea, are the most elevated summits. Besides the mountain and hilly districts, there are very extensive, though progressively diminishing, tracts of moor, moss, and bog. There is, also, a large extent of natural wood and plantations. The latter were much extended by the operations of the late Duke of Atholl, who planted above 15,000 statute acres! But, notwithstanding these deductions, the cultivated land is estimated at from 530,000 to 560,000 acres, or at about a third part of the entire surface. The most valuable tract of low land is denominated the Carse of Gowrie, being the district bounded by the Tay on the south and west, the Sidlaw Hills on the north, and Forfarshire on the east. Its soil is mostly a deep rich clay; and, in point of fertility, it is not, perhaps, surpassed by any land in the kingdom. — (See *antè*, p. 247.) The lower part of Strathearn, from Forteviot to the confluence of the Earn and Tay, consists of a similar soil, and is hardly less fertile. Exclusive of these, and the lowlands along the Tay, above Perth, there are in the valleys of the Teith, Forth, and other rivers, extensive tracts of carse land, and of sandy, gravelly loam. Light gravelly soil is, indeed, predominant in Perthshire. There are some very large estates; but there is, also, a fair proportion of the smaller class of proprietors. Arable farms vary in size, from 50 to 500 acres. The same plan that formerly prevailed in Argyle (see that article) of holding lands in common prevailed throughout the highlands of Perthshire; but examples of it are, at present, rarer in the latter than in the former. Farms in the lower districts universally let on lease, generally for 19 years; large stock farms are also let on lease; but some of the small highland occupiers hold from year to year. Buildings, and other accommodations, of the farmers, in the lower districts, for the most part substantial and excellent; but in some of the highland districts they are still, in many instances, very bad and deficient. Wheat and beans, of excellent quality, are the prime articles of cultivation in the carse of Gowrie, Strathearn, parts of Strathmore, the valley of the Forth and Teith, &c. In the midland districts, barley, and, in the higher, oats, are the principal crops. Potatoes every where cultivated, largely consumed, and recently exported in large quantities to the London market. Turnip culture extensively prosecuted. Considerable quantities of fruit, as apples, pears, &c., are produced in the vales, particularly in Gowrie. Breeds of cattle various, but none peculiar to the county; the stock differs with the varying quality of the land on which it is pastured. Number of sheep vastly increased within the last 40 years. Formerly the white or yellow-faced small mountain breed was the only one known. About 60 years ago the black-faced Tweedale breed was introduced; and more recently they have been partially displaced by the Cheviots. Dr. Robertson estimated the entire stock in all parts of the county, in 1813, at 220,000; but we are assured that this is now much under the mark. Roads signally improved; as much so, certainly, as in any other Scotch county. Coal is found in the southern part of the county contiguous to the Frith of Forth; and limestone and freestone are pretty generally diffused. Average rent of land in 1810, *5s. 6d.* an acre. The linen and cotton manufacture has been introduced, particularly into the city of Perth; but neither has had any very extraordinary success; so that, on the whole, Perthshire may be regarded as an essentially agricultural district. Principal rivers, Tay, Forth, Earn, Teith, Lyon, Garry, Tummel, &c. Fisheries on the Tay about the most valuable in the kingdom. Parishes, 80. Perth returns 2 members to parliament; 1 for the county, and 1 for the city of Perth. Some parishes in the south-western part of the county are joined, for election purposes, with the counties of Kinross and Clackmannan. The borough of Culross unites with those of Inverkeithing, Dunfermline, &c. in returning a member. Principal towns and population in 1831, — city of Perth, 20,016; Crieff, 4,786; Dunblane, 3,288. Population of county in 1831, 142,894. Valued rent, 339,892*l.* Scotch. Annual value of real property in 1815, *555,532l.*

21. *Angus*, or *Forfarshire*, a maritime county, is bounded on the south by Perthshire and the Frith of Tay; on the east, by the North Sea; on the north-east, by Kincardine; on the north, by Aberdeen; and on the west, by Perth. It is computed to contain 570,880 acres, of which 2,560 are water. This opulent and flourishing county is naturally divided into 4 districts. The first, or Grampian district, comprises somewhat less than half the surface, including the whole country north of a line drawn from Lintrathan on the west, by Cortachy, to Edzell. The mountains in this tract are sometimes called the Braes of Angus, and ascend pretty gradually to the northern boundary of the county, formed by the ridge separating it from Aberdeenshire. These mountains are mostly rounded and tame; are covered with a thin coat of moorish earth, and carry stunted heath. In some places, however, particularly in Glen Clova, the mountains exhibit bold, terrific precipices; and where there is any soil upon them, it is clothed with green and succulent herbage. The next division of the county forms part of the great valley of Strathmore, being provincially designated the *How of Angus.* It occupies the space between the foot of the Grampians and the Sidlaw Hills, extending about 33 miles east-north-east with a breadth varying from about 4 to 6 miles. It is beautifully diversified, by gentle eminences, well cultivated fields, plantations, and country seats; though in a few places it is still waste. Soil in the valleys mostly alluvial; but not so fertile as might thence be supposed. The Sidlaw Hills form the third district. They run parallel to the Grampians, rising to about 1,400 feet

in height: some of them are detached, with conical summits; of these Dunsinnan Hill, "married to immortal verse," is by far the most celebrated. Some of them are covered with stunted heath, while others are cultivated to their very tops. The fourth and last district consists of the low ground lying between the Sidlaw Hills, the Frith of Tay, and the sea. With few exceptions, it is a fertile, highly cultivated tract, extending over about 142,000 acres. On the whole, Angus contains a greater proportion of land fit for the plough than any other Scotch county. The climate of Forfarshire varies with differences of altitude, exposure, soil, &c. Some large estates; but property, on the whole, a good deal subdivided. Size of farms very various. It is supposed that, in 1808, there were, in all, 3,222 farms in the county. In the lower districts land is usually let on 19 years' leases, but in some parts of the Grampian districts there are no leases; and "where this is the case, there is no improvement, and cultivation is in the same backward state in which it was some hundred years ago." — (*Survey*, p. 248.) In parts of this district, the ancient system of holding lands in common and *run-rig* still prevails. Farm buildings and cottages formerly wretched; but in the lower districts they have been mostly rebuilt within the last 40 years in a substantial and convenient manner. In the Grampian district, however, the houses of many of the small farmers and cottagers continue to be as bad as possible. "They are damp, smoky, and dirty in the extreme; and it is hard to say whether their occupants, or their cattle, be worse accommodated. Such houses are commonly arranged together in clusters, with intermediate houses for the cattle, forming a sort of village without symmetry or plan. The dung is commonly thrown into a sort of hollow in front of each dwelling house, which it is difficult to enter without going to the knees in filth." — (*Survey*, p. 128.) Drainage, and all sorts of agricultural improvements, are making rapid progress. Fallowing is general in the low grounds, which produce heavy crops of wheat. Potato and turnip culture much extended. Bone manure has been extensively introduced, and large quantities are now prepared at Dundee and other towns. Breed of cattle various. Sheep originally small white-faced mountain-breed; but now, as in the other Highland districts, the black-faced and Cheviot breeds have been largely introduced, particularly since the extension of the sheep-farming system. In 1813, the natural woods and plantations were supposed to cover 20,764 acres; but from the extension of plantations in the interim, they may now be safely estimated at from 30,000 to 35,000 acres. The following extract from the notice of the parish of Oathlaw, in the *How of Angus*, in the *New Statistical Account of Scotland* (No. 5. p. 310.), may be applied to the whole county: — "At the time of the last Statistical Account, much of the land in the parish was in a state of waste, the appearance of the country was bare and bleak, the climate cold and damp, owing to the quantity of water on the land. Most of the houses were at that time of the rudest and meanest kind, built of unhewn stone and covered with thatch; scarcely one of mason work, or covered with slates. *Now* the farms are all laid out and enclosed, draining is carried to great perfection, and farm houses and offices are neatly and substantially built and covered. Thriving woods and belts of plantations are rising up, and giving a rich and clothed appearance to the country. Along with all this, it is gratifying to observe that the habits of the people are improving. There is now a greater neatness and cleanliness in their dwellings, and a greater share of the comforts of life amongst them; and though last, not least, there is evidently an increasing desire of information, and, generally speaking, a higher and better tone of moral feeling." Average rent of land in 1810, 9*s.* 2*d.* an acre. Minerals, with the exception of limestone, of little value. Dundee is a place of great and rapidly increasing importance, both as respects trade and manufactures. It is the principal seat of the linen manufacture, which has made an astonishing progress during the last few years, especially since the abolition of the bounties and restrictive regulations connected therewith. In fact the exports of linen from Dundee only are now about equal to those from the whole of Ireland! But, though the grand centre be at Dundee, the manufacture is generally diffused amongst the other towns of the county. There are some valuable salmon fisheries along the coast and in the rivers. Principal rivers, — North and South Esks, and Isla. Angus contains 56 parishes, and 5 royal burghs. It returns 3 members to parliament; viz., 1 for the county; 1 for Dundee; and 1 for the burghs of Montrose, Arbroath, Brechin, Forfar, and Inverbervie. Principal towns and population in 1831, — Dundee, 45,355; Montrose, 12,055; Forfar, 7,949; Arbroath, 6,660; Brechin, 6,508. Population of county in 1831, 139,606. Valued rent, 171,240*l.* Scotch. Annual value of real property in 1831, 361,241*l.* *

22. *Kincardineshire*, or the *Mearns*, a maritime county, is bounded on the south and south-west by Angus; on the east by the North Sea; and on the north and north-west by Aberdeenshire. It contains 244,480 acres, of which 1,280 are water; half the county is supposed to consist of cultivated land, wood-land, improveable moor, &c.; and half of mountains, hills, &c. The Grampian Mountains occupy the western, central, and most of the northern parts of the county; extending eastwards from the Angus border, near Fettercairn, and the Aberdeenshire border, a little to the south of the Dee, to Stonehaven and Nigg. They are not very lofty. Mount Battock, on the confines of Angus, the highest amongst them, rises 2,611 feet above the level of the sea. The arable land consists principally of the *How of the Mearns*, that is, of a continuation of Strathmore, or the *How of Angus*, extending from Strathcathro and Marykirk to within 4 miles of Stonehaven. It contains about 50,000 acres of comparatively low, fertile, and generally well cultivated land, having about 7,000 acres of thriving plantations. On the east, the *How* is sheltered by a range of low hills which separate it from the *coast district*. The latter contains about 68,000 acres, of which about 32,000 are in a high state of culture; the remainder being hill pasture, moor, and woodland. The other arable district consists of the narrow glen or valley lying along the Dee. Climate in the lowlands mild, but rather late. Property in a few hands. Arable farms of all sizes; many small, but some from

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* The *Survey* of this county, by the Rev. Mr. Headrick, is one of the very best of that class of publications.

400 to 500 acres. The remarks as to leases, buildings, management, &c., made under the head of Angus, apply with little variation to this county. In 1807, there were estimated to be 1247 acres under wheat; 9,806 do. under barley; 22,784 do. under oats; 1,742 do. under beans and peas; 6,142 do. under turnips; 1,160* do. under potatoes; 236 do. under flax; 2,619 do. in fallow; 472 in gardens; and 28,641 under artificial grasses: making a grand total of 74,849 acres under cultivation, or about 30 per cent. of the entire surface. The natural woods and plantations were then supposed to cover 17,609 acres. The stock of cattle was then also estimated at 24,825 head; of which 6,236 were milch cows, and 5,280 calves; and the sheep stock at 24,957, exclusive of lambs. Of the sheep, 21,500 were depastured on the Grampians; and the remainder on the lower parts of the county by the coast side, and in the *How.* — (*Robertson's Rural Recollections*, p. 464.) Improvements have been and are prosecuted with extraordinary spirit in this county, and the value of the land has been augmented in a degree that could hardly have been conceived possible. Average rent of land in 1810, 13*s.* 2*d.* an acre. Lime, the only mineral of any importance, is very abundant. The manufacture of those beautifully jointed and varnished wooden snuff-boxes, now in universal demand, originated at the village of Laurencekirk, in this county, about the year 1790, where it is still carried on. Cumnock and Mauchline, in Ayrshire, are now, however, the principal seats of this ingenious manufacture. Some linen is wove at different parts in the county. Principal rivers, Dee, North Esk, Bervie, Dye, &c. There are some valuable salmon fisheries. The Mearns contains 19 parishes, and 1 royal burgh, Inverbervie, an inconsiderable place; and sends 1 member to parliament. Stonehaven is the principal town. Population of county in 1831, 31,431. Valued rent, 74,921*l.* Scotch. Annual value of real property assessed in 1815, 94,861*l.*

23. *Aberdeenshire*, an extensive maritime county, having about 60 miles of sea-coast, is bounded on the south and south-west by the counties of Kincardine, Angus, and Perth; on the west and north-west by Inverness and Banff; and on the north and east by the North Sea. It is estimated to contain 1,260,800 acres. About a fifth part of the surface consists of high mountainous tracts; and these, with hills, extensive moors, mosses, and other waste lands, occupy nearly two thirds of the entire county. It was anciently divided into the districts of Mar, on the south and west; Fromartin, Garioch, and Strathbogie, in the middle; and Buchan, on the north. The mountains in the south-western parts, in the district of Mar, near the source of the Dee, are (Ben Nevis only excepted) the highest in Scotland. Ben Macdhu, on the confines of Inverness-shire, is 4,327 feet above the level of the sea, being only 43 feet lower than Ben Nevis. Cairntoul has an elevation of 4,245 feet; Cairngorm, of 4,095; and several others vary in height from 3,000 to 3,700 feet. These mountains present, in some places, vast perpendicular ledges; their summits are generally bare, consisting sometimes of smooth and solid, and sometimes of rugged detached, masses of granite. The extent of absolutely

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* There is now a much greater breadth of land under potatoes.

barren land on the upper parts of these mountains reaching from Lochnagar on the south, and Cairnneelar on the west, to Benavon on the north, is at least 100 square miles; and the moory or mossy soil on their ridges, and the narrow glens between them, amounts to about 200 square miles more. The arable land lies principally between the Don and the Yethan, in the districts of Fromartin and Garioch; in Strathbogie, and between the Ugie and the sea on the north, in the district of Buchan. In the lower parts round the coast, clay is the prevalent soil; in the upper arable districts there is a considerable extent of light, sharp, sandy loam. Sand, moor, and moss prevail on the hills and higher grounds. Owing to its projecting into the sea, and the great extent of coast, the winters are mild, but the summers are short and usually cold. In 1811, Aberdeenshire was divided among 228 proprietors, as follows:—

3 had estates valued above 10,000*l.* (Scotch) each; 6, from 4,000*l.* to 10,000*l.*; 6, 3,000*l.* to 4,000*l.*; 16, 2,000*l.* to 3,000*l.*; 9, 1,600*l.* to 2,000*l.*; 16, 1,200*l.* to 1,600*l.*; 11, 1,000*l.* to 1,200*l.*; 19, 800*l.* to 1,000*l.*; 51, 400*l.* to 800*l.*; 19, 300*l.* to 400*l.*; 13, 200*l.* to 300*l.*; 30, 100*l.* to 200*l.*; 29, below 100*l.*

Great diversity in the size of farms; but though the number of small occupancies has been materially diminished, there are more of them at present in the low grounds of Aberdeenshire than in most other arable districts of Scotland. Usual for mechanics to occupy a patch of an acre or two. Houses and offices similar to those in Angus and Kincardineshire. Tillage husbandry of a mixed sort, and very much improved. About 160,000 acres of land are supposed to be annually sown with oats, being more than is ploughed for all other purposes whatever. A good deal of bear or big is raised; and some, but not much, wheat. In fact, neither the soil nor climate of this county are suitable for wheat. It is often thrown out of the ground by storms or hard frosts, succeeded by thaws, in the winter or early in the spring; and in late seasons it is exposed to heavy rains in September. Turnip culture has rapidly extended. In 1811, there were 20,000 acres under turnip, being about 5 times the extent of land under potato; but, though the turnip culture has increased in the interval, we are informed that the proportion under the potato is now greater. On the small holdings of tradesmen and others, a good deal is done by the spade. Above 3,500 acres have been trenched in the vicinity of Aberdeen; and the practice of trenching is general throughout the county. This is necessary to get quit of the blocks of granite with which the soil is incumbered. The larger pieces are cut into stone for building or pavement, being partly consumed in the country, and partly exported: the smaller pieces are put into *consumption dykes*, or are employed in the construction of roads, drains, &c. In no country, perhaps, has nature done less to promote improvement, and in none has the patient industry of man done more. Large additions are annually made to the arable land. Farmers from Berwickshire, and other improved southern districts, have taken farms in this county; and, by setting an example of improved cultivation, have done much to introduce a knowledge of the best systems and modes of management. The greatest obstruction to the progress of improvement consists, it is said, in the landlords not being sufficiently careful to prevent the intrusion of sub-tenants upon their estates; but they are more alive to this evil now than formerly. Woods very extensive and valuable. Those of Mar only occupy nearly 100 square miles. A greater number of cattle are bred in this than in any other Scotch county. The native breed is preferred by the best judges. They have increased much in size during the last 30 years; and are said, indeed, to have *doubled in weight* since the introduction of the turnip husbandry! — (*Survey of Aberdeenshire*, p. 468.) The stock of cattle in 1811 was estimated at 110,000; of which 28,000 were milch cows, 22,000 calves, 20,000 year olds, 19,000 two-year olds, and 21,000 three years old and upwards. The dairy husbandry has made great progress during the last dozen years. The value of the butter shipped from Aberdeen and Peterhead is now believed to exceed 100,000*l.* a year. The stock of sheep in this county was formerly greater than at present. In 1811, it was not supposed to exceed 100,000; but it has increased since, notwithstanding sheep-farming has made less progress in this than in any other Highland country. Breed various: small white-faced, black-faced, and Cheviots. Limestone is abundant; and there are quarries of excellent slate. Aberdeen granite is much esteemed; the value of the exports of it to London, and other places, having in some years exceeded 40,000*l.* Average rent of land in 1810, 3*s.* 8*d.* an acre. The city of Aberdeen is the seat of a university; and has considerable manufactures. Principal rivers, — Dee, Don (on both of which there are considerable salmon fisheries), Yethan, Ugie, Bogie, Doveran, &c. Parishes, 85. Aberdeenshire returns 1 member to parliament for the county; 1 for the city of Aberdeen; and the boroughs of Peterhead, Kintore, and Inverury, unite with Elgin, Cullen, and Banff, in returning a representative. Principal towns and population in 1831, — city of Aberdeen, 58,019; Peterhead, 6,695; Fraserburgh, 2,954. Population of county in 1831, 177,651. Valued rent, 235,665*l.* Scotch. Annual value of real property in 1815, 325,218*l.*

24. *Banffshire*, a maritime county, is bounded on the north by the Moray Frith; on the east and south by Aberdeenshire; and on the west by Inverness-shire and Morayshire. It contains 414,080 acres, of which 1,280 are water. Along the coast, which extends from near Troup to Spey Mouth, a distance of about 21 miles, the surface is pretty level; and the soil, consisting chiefly of sand and loam, is, in general, well cultivated, and highly productive. But, with this exception, the surface is mountainous and hilly, with only a few valleys interspersed. Property in immense estates; above two thirds of the county being divided among 4 entailed proprietors. Some large, with many small, farms. Buildings similar to those in other Highland counties. Agriculture has been much improved in Banff, principally through the meritorious exertions of Lord Findlater and other intelligent landlords. Wheat, barley, turnips, and all the crops now usually cultivated in Scotland, are raised in this district; but oats occupy by far the largest portion of the ground under the plough. Tillage is in most places, however, a secondary object. The principal dependence of the husbandman is on his cattle, there being com-

paratively few sheep in this county. The old native cattle were a hardy and valuable breed; but they are now seldom met with except in the upper districts, where, owing to the deficiency of food, they are stunted in their growth. In several of the lower districts, the Galloway breed of cattle has been extensively introduced, and has been found to answer exceedingly well. The polled breed of Aberdeen, and some Ayrshire cows, have also been introduced. Stock of cattle in the county estimated at about 25,000. Marble, limestone, and marl abound; but, owing to the want of coal, most of the lime is brought from Sunderland and the Frith of Forth. Rock crystals and topazes are found on the mountains on the southern and western boundaries of the county. The lichen used in the preparation of the dye-stuff known by the name of cudbear, is also gathered on the mountains. Many thriving plantations; but the natural woods inconsiderable. Average rent of land in 1810, 3*s*. 9*d*. an acre. The Spey, one of the largest of the Scotch rivers, forms part of the western, and the Doveran part of the eastern, boundary of the county. Parishes, 24. Banffshire returns a member to parliament; and the boroughs of Banff and Cullen unite with Elgin and others in returning a member. Banff and Keith are the principal towns; the former having a population of 3,711, and the latter of 4,464. Population of county in 1831, 48,604. Valued rent, 79,200*l*. Scotch. Annual value of real property in 1815, 88,942*l*.

25, 26. *Moray*, or *Elginshire*, and *Nairnshire*, two contiguous maritime counties, lying to the east of Banff, are united under the same sheriff, and may be most advantageously treated together. They are bounded on the north by the Moray Frith; on the east by Banff and a portion of Inverness; and on the south and west by Inverness. They contain 433,920 acres, of which 6,400 are water. Surface for the most part hilly and mountainous; but on the sea-coast there is a considerable extent of light, fertile, arable land; though, in some places, particularly in Nairn, it is much encumbered with dry moveable sand. The climate along the Moray Frith is noted for its mildness, being, in fact, one of the best in Scotland. Wheat has for a long period been successfully cultivated along the shore; and about the best samples in the London market not unfrequently come from Moray! Property in a few hands. Farms of all sizes. Farm-houses and buildings formerly wretched; but those on the larger farms have been mostly rebuilt, and are now substantial and commodious. The turnip husbandry has been extensively introduced; improvements of all sorts have been attempted, and such of them as were found to answer have been carried to a considerable extent. Latterly, however, the progress of improvement in this county has been less rapid than in most other districts of Scotland. Much might be done for the *Braes of Moray*, but they continue in a comparatively neglected state. Cattle improved by crossing with the Skye and Argyleshire breeds. Stock in both counties supposed to amount to about 23,000. Sheep-farming not carried on to any very great extent. Sheep principally the old white or yellow-faced breed; but others have been largely introduced. There is a considerable extent of natural wood and of plantations. Average rent of land in 1810, 3*s*. 5*d*. an acre. Lead, iron, lime, marl, freestone, and slate are met with; but the first two are not wrought; and of the others only the freestone to any extent. The salmon fisheries on the Spey, which divides Banff from Moray, are very valuable; there are fisheries, but of inferior importance, on the Findhorn. Exclusive of the above, the Nairn is the principal river. Parishes, 30. The 2 counties jointly return a member to parliament; and the burghs of Elgin and Nairn join with others in returning members. Principal towns and population in 1831, — Elgin, 6,130; Forres, 3,895; Nairn, 3,228. Population of counties in 1831, — Moray, 34,231; Nairn, 9,354. Valued rent, 80,766*l.* Scotch. Annual value of real property in 1815, — Moray, 73,238*l.*; Nairn, 14,902*l.*

27. *Inverness-shire*, a maritime county, and the most extensive of those of Scotland. It stretches quite across the island, being bounded on the south by the counties of Argyle and Perth; on the east, by those of Aberdeen, Banff, Moray, and Nairn; on the north, by the Moray Frith and Ross-shire; and on the west, by the Atlantic Ocean, in which Skye, and many other islands attached to it, are situated. It contains 2,716,800 acres, of which the mainland occupies 1,943,920, and the islands 773,760; the former having 84,480, and the latter 37,760, acres of water. The mainland of Inverness-shire is exceedingly wild, rugged, and mountainous, containing a great extent of moss and moor. It is believed, indeed, that there is only about a *fortieth* part of the surface not naturally covered with heath; but a good deal of heathy ground is arable, and a considerable extent of it has been improved and cultivated. Ben Nevis, 4,370 feet above the level of the sea, being the highest mountain in Great Britain, is situated in the lordship of Lochaber, near Fort William, in this county. The mountains in Badenoch, contiguous to Perthshire, and on the confines of the south-western part of Aberdeenshire, are also very high and rugged. The cultivated land is chiefly to be found in the low district contiguous to Inverness, along the innermost part of the Moray Frith; in Badenoch, along the Spey; and in some narrow glens along the other rivers and lochs. Climate very various; but, speaking generally, it may be said to be wet and stormy on the western coast, severe in the interior, and comparatively mild and dry on the Moray Frith. In 1808, the landed property of Inverness-shire was divided among 83 proprietors, as follows; viz. —

7 estates of above 3,000*l.* a year (Scots) valued rent.; 6, from 1,000*l.* to 3,000*l.*; 23, 400*l.* to 1,000.; 33, 100*l.* to 400*l.*; 14 under 100*l.*

Farms of all sizes. Some grazing farms extend over several square miles of country, while some of the small arable farms include only a few acres; but a certain extent of hill pasture is for the most part joined to the latter. The number of these small holdings has, however, rapidly decreased since the introduction of sheep-farming; and there has, in consequence, been a great saving as well of the labour of horses as of men, a great increase of disposable produce, and also a great increase of comfort and industry. Large farms uniformly let on lease; but many small ones held from year to year, — a sort of tenure which insures the sloth and poverty, as well as the dependence, of the occupiers. The farm-houses built within the last 40 years, for gentlemen, or the wealthier class of store-farmers, are in general well constructed and substantial; but those of the poorer tenants and cottagers are, in most places, mean beyond description. "The huts of the Indians, bordering on the lakes of the St. Lawrence, cannot be worse in point of structure and accommodation." — (*Robertson's Survey of Inverness*, p. 56.) Rearing of cattle and sheep the principalemployment. The former are mostly of the Skye or Kyloe breed, the entire stock being supposed to amount to from 40,000 to 45,000. The flocks of sheep have been very greatly increased during the last 30 years. In 1798 the stock of sheep was estimated at about 25,000. Mr. Robertson supposes that in 1808 it had increased to 50,000: but both these estimates are believed to have been below the mark; and, allowing for this, and the increase that has taken place since, we are assured that the present standing sheep stock is considerably above 120,000. Lintons and Cheviots have been widely diffused. It has been stated in proof of the extraordinary increase in the value of land in this county, that the rental of the pastoral estate of Glengarry, in 1788, did not exceed 800*l.* a year, whereas it produced in 1828 from 6,000*l.* to 7,000*l.*! — (*Parliamentary Paper*, No. 175. Sess. 1828, p. 63.) A great sheep fair is held annually at Inverness, in the month of July, where dealers and agents from the south meet the sheep farmers of this and the adjoining counties, and sales to a very great extent are effected. Probably 100,000 sheep and 100,000 stones of wool are, at an average, disposed of at this fair. — (*Anderson's Highlands*, p. 12.) Natural woods extensive and valuable; and there are besides a good many extensive plantations. The character and condition of the people of this, as well as of the other Highland counties, are vastly superior to what they were in the earlier part of last century. "The enormous crimes of bloodshed, of rapine, and plunder, carried on during the feuds of former ages, and not entirely abolished even a century ago, in open defiance of law and government, are now never heard of. The domestic and social virtues are now more revered and cultivated by all ranks. The comforts of life, and the friendly intercourse of society, are enjoyed by the higher orders as much as in any country; and the condition of the lower ranks was never as happy in these respects as at present. The law is every where predominant, and the administration of it upright and impartial. Single individuals travel unarmed in all directions through the Highlands, with thousands of pounds in their pockets, to purchase cattle, without dread or annoyance." — (*Survey*, p. 83.) The greatest part of this wonderful improvement must be ascribed to the excellent roads constructed by General Wade, and more recently by the parliamentary commissioners. They have been carried through every part of the county; and have rendered various districts, that were formerly almost inaccessible, pervious to civilisation and good order. Their influence has been, in some respects, quite astonishing. Previously to the formation of these roads, neither carts nor any other sort of carriage could be used, the whole intercourse of the country being carried on by means of Highland ponies or *garrons*. Until 1755, the mail between Inverness and Edinburgh was conveyed by men on foot! And in 1740, the magistrates of Inverness advertised for a saddler to settle in the burgh! — (*Chambers's Gazeteer of Scotland*, art. *Inverness-shire.*) In 1760, the first post chaise was brought to Inverness; and it was, for a considerable period, the only four-wheeled vehicle in the district. In 1803 there were 5 post chaises in the town of Inverness; and so rapid has been the progress of improvement, that at present there are 4 coach manufactories in the town; and from 160 to 200 coaches, gigs, &c., are annually assembled at the Inverness races. — (*Parl. Paper*, No. 1. 75, Sess. 1828, &c.) Average rent of land, including islands, in 1810, 1*s*. 6*d*. an acre. Limestone, slate, and marble abound in many parts. Lead has been discovered at two or three places, but it is not wrought; and the want of coal renders the limestone of little value. Principal rivers, — Spey, Ness, and Beauly; on all which, but especially the first two, there are valuable salmon fisheries.

The Gaelic language prevails throughout almost all Inverness-shire, and a pretty large proportion of the inhabitants of its western parts do not even understand English. Owing to the thinness of the population, and the consequent difficulty of establishing schools, education in this and the other Highland counties is not nearly so extended as in the Lowlands. Recently, however, a good deal has been done to make it more available.

This county is divided into two nearly equal portions, by the great glen or valley, stretching in a south-east direction from the town of Inverness, on the Moray Frith, to Loch Linnhe, opposite to the Island of Mull, on the western coast. It is very narrow, and consists principally of Loch Ness, Loch Oich, and Loch Lochy. The surface being nowhere in this glen more than 94 feet above the level of the sea, advantage was taken of this circumstance, and of the facilities afforded by the contiguous chain of lakes, to open a navigable communication between the eastern and western coasts, and consequently to avoid the tedious and dangerous navigation of the Pentland Frith. The entire length of the Caledonian Canal, inclusive of the lakes, is rather more than 60 miles; but little more than 23 miles is artificial. In point of dimensions, it exceeds every other canal in the island. It was constructed at the expense of government, and is a truly noble work. It promises, however, to be a very unproductive undertaking; and, but for the invention of steam-boats, would have been nearly useless. Inverness-shire contains 35 parishes. The county sends a member to parliament; and the borough of Inverness joins with Fortrose, Nairn, and Forres, in returning a representative. Inverness, the only town of any importance, has a population of 14,324. Population of county in 1831, 94,797. Valued rent, 73,188*l*. Scotch. Annual value of real property in 1815, 185,565*l*.

28, 29. ***Ross and Cromarty Shires*** form a maritime district of great extent. Cromarty, however, is but a small county, and consists of various straggling and widely separated patches, almost entirely surrounded by parts of Ross-shire. Ross and Cromarty are bounded on the south by Inverness-shire and the Beauly, and Moray Frith; on the east, by the latter; on the north, by the Frith of Dornoch and Sutherland; and on the west, by the Atlantic Ocean, in which are situated the islands attached to Ross. They contain together

1,904,000 acres, of which 1,532,800 are mainland, and 375,200 islands; the freshwater lakes cover a space of 44,800 acres on the mainland, and of 12,800 in the islands. The eastern parts of the county,—consisting of the districts called the *Black Isle*, or the peninsula between the Beauly and Moray Friths and the Frith of Cromarty; add *Easter Ross*, or the peninsula between the Friths of Cromarty and Dornoch, from Alness Kirk to Tain and Tarbet Ness,—are comparatively flat and fertile. There is in Easter Ross a considerable extent of clayey loam, and of light sandy soil. The soil of the Black Isle is very various. Much of it is poor. The cultivated portion consists principally of clayey loam, good black mould, and sandy loam. In Strathpeffer, and the country round Dingwall, the soil is clayey. But with these exceptions, the rest of the country is wild, dreary, rugged, and mountainous, interspersed with lakes and narrow glens, that afford pasture for sheep and black cattle. Estates for the most part, very large; but there are several that are not of much value. Farms of all sizes; but the number of small occupancies, though still very considerable, is much diminished. The native breed of cattle is hardy, compact, and well suited to the country; but in the western parts of the county the Skye and Argyleshire breeds, or one closely allied to them, is most prevalent. Cattle formerly much more abundant than at present. Sheep-farming has, for many years past, engrossed almost the whole attention of the principal farmers and improvers; so that, besides a decrease in the numbers, it is also said that the breed of cattle has deteriorated. This, however has been denied by others; and, at all events, the baneful practice of overstocking is no longer carried to anything like the extent to which it was formerly practised in this as well as in other Highland counties. At no very distant period oxen were extensively employed in field labour in this county, and in Inverness and others; but at present they are almost wholly disused. All sorts of improvements, both in breeding and cropping, have been tried by the principal proprietors, and by the many intelligent and enterprising sheep farmers that have immigrated into Ross-shire from the south. Most part of Easter Ross, great part of the Black Isle, with the country round Dingwall, and along the north-west shore of the Inner Frith of Cromarty, now ranks with the finest districts in Scotland. It is traversed in every direction by excellent roads; has a more than usual number of gentlemen's seats and plantations; the fences consist principally of hedge and ditch; and it has a goodly display of hedge-row trees. Agriculture is wonderfully improved; and the crops of wheat and turnips are at present nowise inferior to those in the more southern counties. (For further particulars see note below.*) But exclusive of these districts, a great extent of mountainous country is still occupied by the old Highland tenantry. These are a brave and hardy race, but poor, and without either enterprise or industry. They occupy the straths or valleys between the mountains and along the banks of the rivers which, in some places, are so thickly tenanted, that there is a family for every Scotch acre of arable land! On this they raise oats, bear or bigg (a species of barley), and potatoes; frequently cultivating the ground with a crooked spade (*caschrom*) instead of a plough. The mode of ploughing which was formerly general over the whole country, and which is still practised by the smaller tenants deserves to be noticed. "The plough is extremely rude. It was drawn by four horses abreast. Between the plough and the horses was a long apparatus of twisted birch twigs, by which they were united. The halters were fixed in 4 holes, made in a piece of wood about 6 feet long, which was held by the driver, who was thus enabled to pull all the horses at once, and encourage them to move forward, by occasionally applying his stick to their noses. He walked backwards, with his face towards the ploughman, and directed the breadth of the furrow slice. A man attended, whose office

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* At the commencement of the present century, from the difficulty of conveyance for exportation, cultivation was almost entirely confined to narrow strips of land situated along the sea coast, and in the immediate neighbourhood of the few sea-port towns; and even here was not brought to that state of perfection which, since the introduction of implements of a less defective description than those formerly used, it has of late years attained. As an instance of the improvement that has taken place in Ross-shire, now the most beautiful and highly cultivated county in the Highlands, I may mention, that there is at present in the service of

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Major Gilchrist of Opisdale, in Sutherland, as farm manager, the individual who first introduced the ploughing of land into regular ridges, and the division of fields into any thing like systematic management in that county; the fields being formerly detached pieces of land, ploughed irregularly, as the ground with the least labour suited. The carts generally used were of the poorest description, with a kind of tumbler or solid wheel, and wicker conical baskets; little or no lime was used for agricultural purposes. 'I succeeded a to farm in this county about 30 years ago (says Major Gilchrist), when the working strength consisted of *sixteen oxen and twenty-four small horses called garrons*; *that farm is now laboured by three pair of horses.*'

"The total amount of wheat then raised in the county (Ross and Cromarty) was not equal to what is now produced on many single farms. It was not until 1813 that the first barley mill, north of the Cromarty Frith, was erected, and in 1821 the first flour mill (at Drummond, on the estate of Fowles) by the same individual. To such an extent, however, has cultivation of late years been carried, that the growth of wheat alone is now (1828) estimated at 20,000 quarters annually, and the exportation of grain to London, Leith, Liverpool, &c., during the last year, amounted to upwards of 10,000 quarters; besides the supply of the extensive and populous pastoral districts of the county, and the towns of Dingwall, Tain, Inverness, &c., to which places, I am credibly informed, upwards of 10,000 bolls of flour are now annually sent for the consumption of the inhabitants. Among other exports may likewise be mentioned the produce of various extensive distilleries situated in different parts of the county, and a considerable quantity of salted pork, bacon, &c., from the ports of Cromarty and Inver Gordon. I understand that, in the year 1819, the sum estimated to have been expended on the purchase of the latter commodity amounted to about 30,000*l.* Indeed, a marked improvement in domestic animals of every description has taken place in the northern counties, since the improved communication with the south. I need hardly allude to the introduction of Cheviot sheep, — to the pains taken in improving the breed of cattle, by the importation of the most improved sorts from the West Highlands, and of cows from Ayrshire. Considerable attention has been recently paid to the breed of horses, both for the purposes of agriculture and draught; and in some instances, those of the finest description have been successfully reared. Nor has the breed of pigs been neglected, several valuable species, both pure and crosses, having been introduced. In short, a general spirit of approximating these counties, in as far as the soil and climate will permit, to the more advanced counties in the south, seems everywhere to prevail." — (*Parl. Paper*, No. 175. Sess. 1828, p. 60.)

was to keep the plough in the ground, by pressing on the end of the beam with his whole weight. A fourth followed with a crooked spade; with which he turned over such parts of the ground as the plough had missed, and he also turned over such slices as had fallen back. The seed was scattered in great profusion, and slightly coverd by means of harrows with wooden teeth. There are many of the country people who still disapprove of harrows with iron teeth, because they tear up the roots of the grass.* Mr. Downie was the first person who introduced an improved plough, worked by a pair horses without a driver. This was done only about 1790, and caused great astonishment among the natives." — (*Mackenzie's Survey*, p. 249.) The smaller tenants uniformly possess a considerable extent of grazing ground, which is commonly contiguous to, but sometimes at a considerable distance from, their arable possession. Their huts are, for the most part, wretched; few of them have either chimneys or windows; they prefer living in the midst of smoke and filth; and, in winter, the cattle are generally housed under the same roof with the family. Except for a few months, when sowing or reaping their crops, preparing and saving their fuel, &c., the greater part of their time is spent in the pursuit of game, in fishing, or in idleness. Previously to the reduction of the duties on whisky, in 1823, illicit distillation was very prevalent, and is still carried on, though to a comparatively small extent. "It cannot be said with truth, that the class of people, of which the great majority of the population consists, enjoy the comforts of life in even a moderate degree. Poorly fed, scantily clothed, and miserably lodged, theirs is a life of penury and toil. Exposed to the temptations of idleness, without its ease, and to the slavery of labour, without its rewards, they drag out a wretched existence, suffering under the continual fear of impending want, and uncheered by any prospect of amendment in their condition." — (Art. *Parish of Glenshiel, New Statistical Account of Scotland*, No. 12. p. 200.) Under these circumstances, no reasonable man can doubt that the measures adopted by many landlords during the last half century for consolidating the small possessions held by the native tenants, and introducing farmers possessed of capital and skill, have been, in a public point of view, eminently beneficial. In some instances the change may have been harshly effected; but we hesitate not to say that it has, on the whole, been highly advantageous to the peasantry themselves. Having been obliged to repair to villages, or to emigrate, they have also been obliged to lay aside their slothful habits; so that, in point of fact, not only the wealth and industry, but even the population of the country, has gained materially by the introduction and extension of that sheep-farming system that has been the theme of so much unfounded animadversion. In proof of this, we may observe that the population of the district amounted, according to the enumerationof Dr. W ebster, in 1755, to 47,456. In 1800 it had increased to 55,877; and notwithstanding the increase of sheep-farming, and the prevalence of emigration in the interim, the population in 1831 amounted to 74,820. Minerals and manufactures of no importance. Average rent of land, including islands, in 1810, 1*s.* 1*d.* an acre. Principal rivers, — Conon, Orin, and Beauly. Parishes, 33. A member is returned to parliament for the united counties of Ross and Cromarty. The burghs of Dingwall, Tain, and Cromarty, are associated with Kirkwall, Wick, and Dornock, in the choice of a representative; and Fortrose is associated for the same purpose with Inverness, &c. Principal towns and population in 1831, — Tain, 3078; Fortrose, 1,799; Dingwall, 2,124. Population of district, inclusive of islands, in 1831, 74,820. Valued rent, 87,940*l.* Scotch. Annual value of real property in 1815, 121,557*l.*[*]

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* This is no longer the case.

30. *Sutherland*, a maritime county, occupying the north-western extremity of the island, is bounded on the south by Cromarty and Ross; on the east by the Frith of Dornoch and Caithness; and on the north and west by the Atlantic. It contains 1,152,640 acres, of which 30,080 are water. The aspect of the country is wild, bleak, and, in many parts, savage. The eastern shore has a small fringe of good arable land; but the rest of the surface is rugged and mountainous, being, however, interspersed with various narrow straths, or glens, and some considerable lakes and morasses. Sutherland, like the other Highland counties, was, till recently, occupied by native tenants, similar in all respects to those of Ross. These, however, have, for the most part, been recently removed either to villages on the coast, or have emigrated; and the lands have been divided into extensive sheep farms, furnished with excellent houses and offices. The native breed of cattle is small, but when crossed by those of Argyle and Skye, it is said to be equal to any that the Highlands can produce. Galloways, and other varieties, have also been introduced. Owing to the extraordinary extension of sheep-farming in this county, the stock of cattle has been diminished in a still greater degree than in Ross-shire; but sheep being much better suited to the country, the change has been, both locally and in a public point of view, highly advantageous; vast tracts having been, through its means, coupled with a very extensive drainage, rendered considerably productive, that were formerly almost useless. Cheviots are found to thrive remarkably well in almost all parts of Sutherland. About 40,000 sheep, and 180,000 fleeces, are said to be annually sent to the south from this county. — (*Anderson's Highlands*, p. 12.) Four fifths of the county belong to the Duke of Sutherland; who has expended vast sums in the formation of roads and inns, the building of bridges, piers, farm-houses, and villages, and other expensive and substantial improvements. Since 1811, 94 miles of road have been made in this county by the parliamentary commissioners, and 350 by individual exertion and statute labour![†] The fringe of arable land along the east coast of the county has been divided into moderate sized farms, well inclosed and drained,

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[*] Sir George Mackenzie's Survey of Ross and Cromarty is an able work. It gives a very good account of the whole method of occupying and farming land in the Highlands, and of the advantages that have resulted from the introduction of sheep-farming.

[†] Some very striking statements, as to the influence of these roads, are given in *Parl. Paper*, No. 175. Sess. 1828, p. 61.

and presenting as good a specimen of the improved turnip husbandry as is to be found in any part of the island. In 1821 there was not a gig in the county; in 1830 there were 41, which exceeds the number of carts in 1821. In 1796 there were only *two* blacksmiths between Bonar Bridge and the Ord of Caithness, whereas in 1830 there were 38! Nowhere, indeed, in Scotland have improvements been attempted on a greater scale, or prosecuted with more zeal, skill, and success, than in this remote county. Whether the change should not have been more gradually introduced, we shall not undertake to say; but there cannot be a doubt, that the character and habits of the people, as well as the rural economy of the district, have been signally improved. From being indolent, and attached to old practices, the peasantry have become comparatively adroit, laborious, and enterprising; and are decidedly better lodged, clothed, and fed than at any former period. They have also improved in cleanliness, beyond what could have been expected. There are three great deer forests; and ptarmigan, grouse, and black-cock, alpine hares, &c. are abundant. Coal, limestone, and freestone are met with. Average rent of land in 1810, 6*d.* an acre. The herring fishery is carried on with spirit and success, both on the east and west coasts; but principally from Helmsdale. Principal rivers, Oickel, Fleet, Brora, and Helmsdale. Sutherland contains 13 parishes. Dornoch, the principal town, has a population of only 504. Population of county in 1831, 25,518. Sutherland returns 1 member to parliament: and the borough of Dornoch unites with Kirkwall, Wick, &c. in choosing a representative. Valued rent, 26,093*l.* Scotch. Annual value of real property in 1815, 33,878*l.*

31. *Caithness*, a maritime county, occupying the north-east extremity of Scotland, is bounded on the west by Sutherlandshire; and on the south, east, and north by the ocean. It contains 446,080 acres, of which 6,400 are water. About three eighths of the surface are supposed to consist of mountains, high moors, and hilly pasture. The mountains lie along the confines of Sutherland, Morven, the highest, having an elevation of 2,324 feet. This mountainous ridge terminates to the south in the stupendous precipices, called the Ord of Caithness, that overhang the sea on the Sutherland border. The rest of the county is so flat, that it may be described as a broad undulating plain: it consists for the most part of vast tracts of moss and moorish ground, covered with stunted heath, intermixed, however, with some spots of superior fertility. Being destitute of wood, as well as of hills, this level district has a bleak, dismal appearance. Owing to the position of the county, which, on all but the west side, is surrounded by the sea, the winters, notwithstanding its high latitude, are mild; but more rain falls here than in any other district on the east side of the island, so that the summers are both cold and wet. Property in a few hands, and mostly under entail. Farms frequently let in small patches, and only from year to year; and in addition to this pernicious tenure, the tenants are not unfrequently burdened with almost indefinite servitudes.* But in despite of these untoward circumstances, improvements of all sorts have, within these few years, been carried on in Caithness

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* These were noticed, and justly-reprobated, by Pennant. — (*Tour in Scotland*, vol. i. p. 203.)

with a spirit and success that no one could previously have conceived possible. Formerly it was almost inaccessible except by sea; but now the mail coach from Inverness regularly reaches Wick, and even Thurso, on the extreme northern coast of the island. Within the last 5 years nearly 200 miles of road have been made at the expense of the gentlemen of the county, exclusive of about 46 miles made by the parliamentary commissioners. In agriculture the advance has been equally great. A great deal has been done in the way of draining, inclosing, taking in waste land, consolidating small farms, and introducing an improved system of husbandry. Oats and bear or bigg are the principal corn crops; wheat has been raised, but the climate is not suitable for it. Potatoes are largely cultivated; and the extent of land under turnip is now vastly greater than at any former period. The greatest change has taken place in the vicinity of Wick and Thurso, but especially the former. Wick has now become the principal seat of the British herring fishery. Its important suburb, Pulteney town, built on the south side of the bay, on land feued by the British Fishery Society, has grown up with something like the rapidity of a manufacturing village. During the fishing season, from 1,500 to 2,000 boats, having each at an average, a crew of about 5 men, rendezvous here. Of these about 500 belong to the town, the others being collected from all parts of the coast, from Northumberland on the east round to the remotest of the Hebrides on the west. Much wealth has in consequence been brought to the town; and a great demand has been created for the produce of the surrounding country. Cultivation has, however, more than kept pace with the increased demand; for, besides supplying the wants of the immense population engaged in the fisheries, large quantities of grain and wool are annually exported. The refuse herrings make excellent manure. At no very distant period, the breed of cattle in Caithness was the very worst in the Highlands. The lands were so much overstocked, that the cattle were not half fed, and many died each spring. But now, through the patriotic exertions of Sir John Sinclair, and other gentlemen, a great change for the better has been effected. The Argyle and Skye breeds of cattle have been extensively introduced; the stocks of different individuals are no longer allowed to herd together in the winter season; and the stock is more nearly adjusted to the pasture. The breed of sheep has also been improved by the introduction of Cheviots. In consequence of these and other circumstances, the value of property in this remote county has advanced astonishingly; and but for the embarrassed state of some proprietors, and the want of capital, the advance would have been still greater. Average rent of land in 1810, 1*s.* 5*d.* an acre. The inhabitants of Caithness are clearly of Scandinavian or Gothic origin. This is evinced as well by their tall figures and fair countenances as by their language. It is only on the borders of Sutherland that we find any trace of the Gaelic. In all the rest of the county English is spoken in considerable purity. The houses of the peasantry have in some parts been materially improved; but speaking generally, their huts are poor and miserable. Many farm houses and offices of a very superior description have been constructed within the last few years. Limestone is abundant; and

Pennant says it used to be carried to be burned with turf on the backs of the fair Caithnesians! Principal rivers, — Thurso, Wick, and Dunbeath. It contains 10 parishes. Caithness sends a member to parliament; and Wick unites with Kirkwall, Dornoch, Tain, Dingwall, and Cromarty, in choosing a representative. Principal towns and population in 1831, — Wick (including parish), 9,850; Thurso, (including do.), 4,679. Population of county in 1831, 34,529. Valued rent, 37,256*l.* Scotch. Annual value of real property in 1831, 35,469*l.**

ISLANDS.

Hebrides, or Western Islands. — Exclusive of the mainland, Scotland has an immense number of islands attached to it, some of which are of great extent, though few are of much value. Those that lie on the western coast, including those in the frith of Clyde, are denominated the Hebrides, or Western Islands. (The *Hebudes* or *Ebudes* of the ancients.) They are usually divided into the Inner and Outer Hebrides; the former consist of the islands nearest to the mainland, including, besides those in the Frith of Clyde, Skye (the second in point of extent of the Hebrides), Mull, Islay, Jura, Coll, Rum, Tiree, &c. The outer Hebrides, popularly called the Long Island, consist of the lengthened range of islands, stretching in a continuous north north-east and south-south-west direction, from Barra Head, in lat. 56° 49′ N., to the Butt of the Lewis, in lat. 58° 51′ N. The principal islands in this range, commencing with its southern extremity, are Barra, South Uist, Benbecula, North Uist, with the districts of Harris and Lewis,: the last 2 form 1 large island, being, in fact, a good deal more extensive than all the rest put together. Exclusive of the above, there belong to the Outer Hebrides a vast number of smaller islands, and islets or rocks. The greater islands are separated from each other by sounds, or arms of the sea, of varying magnitudes, but in no case above 10 or 12 miles wide, and generally interspersed with smaller islands; so that the range has all the appearance of having at one time formed one entire island. The Outer are separated from the Inner Hebrides, and the mainland of Scotland, by the channel called the Minsh. This, where narrowest, between Skye and North Uist, is from 15 to 16 miles across. In all, the Hebrides are supposed to contain about 200 islands, of which about 80 are inhabited. Those in the Frith of Clyde form the shire of Bute, and the rest are distributed among the shires of Argyle, Inverness, and Ross. — (See *antè*, p. 233.) They have never been surveyed with any considerable degree of accuracy, so that but little dependance can be placed on the accounts of their measurement. But, according to the best attainable data, their total area is supposed to amount to about 2,739 square miles, or 1,688,960 acres, of which about 64,000 acres are fresh-water lochs, or lakes. Those in the Frith of Clyde, that is, Bute, Arran, and the Cumbraes, are estimated to contain 165 square miles, or 105,600 acres. Some of the islands, particularly Arran, Skye, Mull, and Jura, contain extensive tracts of high rugged, and mountain land; and this, also, is the case in some parts of the district of Harris. The surface in many places, particularly in the Long Island, or Outer Hebrides, consists of extensive dreary tracts of moss and moor; and in most islands there is a greater or less extent of hill pasture. The soil varies considerably; but, except in Islay, deservedly styled the Queen of the Hebrides, and Bute, a good part of the soil of which rests on a limestone bottom, and a few favoured districts in Skye and the other islands, it is, in general, miserably poor. About two thirds of the whole is supposed to consist of peat earth, resting mostly on granite or gneiss, the points of which frequently portrude through the moss. Along the western shores of the Long Island, and in some other places, there is a large extent of sandy soil. In parts the sand is so loose, as to drift with the winds; but where it is mixed with peat and the clay found on some of the declivities, it is tolerably productive. Climate mild, but variable, tempestuous, and humid. In the Outer Hebrides spring commences towards the end of March, summer about the end of May, autumn about the middle of August, and winter towards the end of October. "The winters are generally mild as to temperature, snow seldom lying long on the ground, especially near the shores, and the lakes being hardly ever frozen. But heavy and continued rains, accompanied with westerly winds, and violent gales from the Atlantic, with showers of sleet and hail, and sometimes thunder, are frequent at this season. Upon the whole, however, the winters are less severe than on the mainland, and especially than on the east coast of Scotland. The commencement of spring is generally colder than the winter, and is always wet and boisterous. As it advances, dry easterly winds prevail, and cause much drifting of the sand and newly-turned soil. Summer is frequenty ushered in with continued rains, and is extremely variable, as is the early part of autumn. When the summer is dry and hot, the grassy pastures are burnt up, and the crops, which are chiefly on sandy soil, are deficient. At all seasons heavy gales are occasionally experienced. In winter the huts are frequently unroofed by these gales, boats broken to pieces, and the sands blown to an immense distance. It is needless to say, that the ocean, during these tempests, presents a magnificent spectacle, its huge billows dashing over the low rocks and islets, and ascending, the precipitous shores, often to an astonishing height, the spray being carried far inland. Judging by the shaggy covering which black cattle and horses assume at this season, one might be apt to imagine the winters more severe than they really are: but this circumstance may depend upon other causes than the lowness of temperature. There is certainly a much greater difference between the pile of an English horse and a Shetland pony, than between the winter temperatures of their places of residence. Westerly and southerly winds are predominant, and generally bring rain. The rapidity with which iron becomes covered with rust is remarkable; and veneered articles of furniture are apt to warp and burst in the joining." * The arable land, which, in the greater number of the islands, is of very small extent, is, for the most part, light and sandy. It is supposed by Mr. M'Donald to amount,

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* Some of the statements with respect to this, as well as most of the other Scotch counties, have been derived from private, but authentic, channels.

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* *Macgillivray's Account of the Outer Hebrides, Quarterly Journal of Agriculture,* No. XI. p. 274.

in the entire Hebrides, inclusive of the islands in the Frith of Clyde, to 180,000 Scotch, or 225,000 statute acres, which he distributes as follows; viz., Bute, 8,000; Arran, 10,500; Gigha, 1,500; Islay, 22,000; Jura, 3,000; Kerreray, 1,000; Collonsay and Oronsay, 3,500; Luing, Saoil, Shuna, Lunga, Scarba, 5,000; Mull, with Ulva, Gometra, Icolmkill, &c., 10,000; Lismore, 4,000; Tiree, 5,000; Coll, 4,500; Skye, with its islets, 30,000; Eigg, Monk, and Cannay, 2,500; Uists and Barra, with Valay, Heisker, Borreray, and islets, 40,000; Raasay and Ronay, 3,000; Rum, 1,000; Harris and Lewis, 26,000; Hirta, 500; — in all, 180,000 Scotch acres, or between an *eighth* and a *ninth* part of the total surface. Assuming the whole extent of the Western Islands to be equal to 1,592,000 Scotch, or about 2,000,000 statute acres, Mr. M'Donald supposes it may be distributed as follows: —

Mountains, morasses, and undrained lakes, scarcely yielding any specified rent to the proprietors	600,000
Hill pasture, appropriated to particular farms, and sometimes enclosed, or at least limited by acknowledged marches, as lakes, rivulets, &c. and paying rent	700,000
Arable and meadow land, under grass, hay, corn, or potatoes	180,000
Kelp shores, dry at ebb-tide, regularly divided among the tenantry, and producing 5,000 tons of kelp, besides manure, annually	30,000
Ground occupied by villages, farm-houses, gardens, gentlemen's parks, &c.	20,000
Ground occupied by peat mosses annually, and by roads, ferry-houses, and boats	22,000
Barren sands, tossed about by the winds, and pernicious to their vicinity	25,000
Ground employed as glebes, or in lieu of glebes, by established clergymen, manses, churches, and church-yards	8,000
Ground occupied by schoolmasters	2,000
Ground (under), natural woods, coppices, and new plantations, chiefly in Bute, Islay, Mull, and Skye	5,000
Total	1,592,000

In Islay, Bute, Arran, Collonsay, and some parts of Skye, Mull, &c., agriculture in all its branches has been very much improved, But in the Long Island, and in the greater part of the Inner Hebrides, it continues in the most backward state imaginable. The *caschrom*, or crooked spade, is frequently used, particularly in the Long Island. The plough, indeed, cannot be employed except in districts that have been drained and levelled; and these, unfortunately, bear, in most places, a very small proportion to the others. About 12 men suffice to turn an acre a day with the caschrom. The old plough of the Hebridians is a miserable instrument; it has only one handle, and is usually drawn by 4 horses driven by a boy: it is now, however, rarely used. Wheat of good quality is raised in Bute; it has also been raised in Islay, but with a doubtful advantage. Oats and barley may be said to be the only white crops raised in the Hebrides, being cultivated to about an equal extent. The barley is of the variety called bear or bigg (*Hordeum hexastichon*). Nine tenths of the population of the Outer Hebrides, and of Tiree and Coll, when they use bread, use that made of barley. The old Scotch gray oat is the species most commonly cultivated: it is very unproductive, and has no good quality, except that it does not easily shake; but other and better kinds of oats are now frequently met with. Except in Islay, and a few farms in the more improved islands, there is hardly any thing like a rotation of crops; and it is customary for lands to be sown with successive crops of oats and barley till they be quite exhausted. The crops are, in consequence, far below what they would be under a better system. It is surprising that the landlords should not vigorously exert themselves to check this abuse: its suppression would redound alike to their own advantage and that of their tenants. Instead of selecting the best, it is, perhaps, the more usual practice for the Hebridean farmers to select the lightest and worst portion of their oats and bere as seed! Good turnips have been raised in Bute, Islay, and some of the other islands, but only on lands in the hands of a few public-spirited individuals. Potatoes were introduced for the first time in 1743; and so rapidly has their culture extended, that they now furnish *four fifths* of the food of the people. Except in some of the more improved districts, they are mostly planted in the Irish fashion, or in lazy beds. Sea weed is the manure most commonly used in raising potatoes, and, indeed, all other species of crops; and it has been surmised that it may be owing to this that the Hebridean potatoes are generally viscid and watery. Small quantities of flax are sometimes raised for family use. Carts are but partially introduced. Except in Skye, Islay, Jura, and Arran, where they have been made by the parliamentary commissioners, and in Bute, roads can hardly be said to exist; and, in the less improved islands, all sorts of articles are either conveyed by sea in boats, or in panniers slung across horses' backs. Black cattle constitute the staple product of the Hebrides. The breed called Kyloes, or West Highlanders, is small, hardy, easily fed, and admirably adapted to the country. Stock supposed to amount to 110,000 or 120,000 *, of which about a *fifth* part are annually ferried over to the mainland. The management of cattle has been materially improved in most of the islands within the present century: formerly overstocking was universal, and large numbers used to perish every year for want of food, in winter and spring; but losses from this cause, though they still occur, are now much less frequent. The native breed of sheep is very small, weighing only from 15 to 20 lbs.; face and legs white, wool of various colours, and these frequently occurring in the same fleece. Weight of fleece varies from ½ lb. to 1 lb. Latterly, however, both the black-faced, or mountain breed of sheep, and the Cheviots have been successfully introduced; but the black-faced appears to be increasing faster than the other. Mr. M'Donald estimates the number of sheep in the islands at rather less than 100,000. But it has increased since 1811, when his excellent work was published. Owing to a better distribution of the land, the number of horses has latterly been a good deal reduced. They are small, but not diminutive, like those of the Shetland Islands, hardy, easily kept, and docile. They are not a fine breed, the head being generally large, and the hair shaggy. The Hebrides are divided among about 50 proprietors, of whom several have very large and pretty valuable estates. Land generally held by tacksmen, tenants, and subtenants, including cottiers, or crofters. The tacksmen correspond to the middle-men of Ireland, holding considerable tracts, which they relet in smaller portions to subtenants. The tenants hold directly from the landlords. Their farms, though sometimes of great extent, are mostly of small value, varying from 5*l.* to 50*l.* a year of rent. They seldom have leases, but mostly hold at will, being liable to be turned out at pleasure. This, also, is generally the case with the subtenants. Sometimes a number of small tenants take a farm conjointly, and hold it on the *run rig*, or partnership plan, already described. — (See *antè*, p. 295.) This, indeed, used to be the common method of occupying land in the Hebrides; and, though discouraged by most landlords, and suppressed on some large estates, it still prevails to a great extent.* The crofters, or cottiers, are a very numerous class, many of them paying their rents in services instead of money. The want of leases, and occupancy by partnership, are all but insuperable obstacles to improvement. The dependence, too, which the cottiers place on their small patches of ground, is found to be exceedingly pernicious: it gives them a sort of security against absolute want, and, by making them in some degree their own masters, fosters that sloth and apathy for which they are so remarkable. In consequence of the minute division of the arable land, and of the general cultivation of the potato, there is, in some places, a great excess of population. Within these few years, some proprietors have exerted themselves to abate this evil by preventing the farther division of the land, and encouraging the emigration of the surplus population. Their efforts have, in some instances, been quite successful; and, while the proprietors have increased their rentals, and been able to avail themselves of the capabilities of their estates for improvement, the interests of those who emigrated, and for whose labour there was no demand at home, have been signally advanced. The total rental of the Hebrides may amount to about 110,000*l.* a year. It was, probably, at one time, larger; or, if it has not been reduced, it must, at all events, have been prevented from rising so high as it would otherwise have done by the decline of the kelp manufacture, and of prices since the peace. The total population of the Hebrides, in 1831, amounted to 104,021, of which the islands in the Frith of Clyde had 14,151. The condition of the people differs much in different islands; but, speaking generally, it is exceedingly depressed. Pennant's account of the inhabitants of Islay, though no longer applicable to them, Islay having been most materially improved in the interim, is still strictly applicable to those of most of the other islands: — "A set of people worn down by poverty, their habitations scenes of misery, made of loose stones, without chimnies, without doors, excepting the faggot opposed to the wind at one or other of the apertures, permitting the smoke to escape through the other, in order to prevent the pains of suffocation. The furniture perfectly corresponds: a pot-hook hangs from the middle of the roof, with a pot pendant over a grateless fire, filled with fare that may rather be called a permission to exist, than a support of vigorous life: the inmates, as may be expected, lean, withered, dusky, and smoke-dried." — (*Tour in Scotland*, vol. ii. p. 263.) But even this striking description is, in numerous instances, short of the reality. The huts frequently afford shelter, in winter, to the cattle of the cottier as well as to his family; and the dung and other filth gathered during the season, is allowed to accumulate untouched till May, when it is removed, and when it is not unusual, also, to unroof the hut. The houses and cottages on the estates of Mr. Campbell of Islay, the Duke of Hamilton, Lord Macdonald, and some other proprietors, have, no doubt, been signally improved; but the above is a correct description of the huts still existing in the Long Island, and in the greater number of the other islands. From September to May, the inhabitants live chiefly on the potato, with some coarse oat or barley bread, and occasional but scanty supplies of fish and flesh. In summer they subsist principally on bread and milk. But in some of the islands it is so deficient, that, at this period, they have for the most part a very emaciated appearance, and are obliged to resort to the shores in search of sand-eels and shell-fish. When the crops fail, they are exposed to the greatest privations. On such occasions, large quantities of oatmeal are imported. The spirit of improvement has, however, been widely diffused, and will, it is to be hoped, extend itself, at no distant period, to all the islands.* In Skye, an extraordinary change has been effected during the present century. In 1800, there was hardly a mile of practicable road in the whole island; and it did not contain more than two or three small slated houses, and, perhaps, a dozen carts. But, in the interval, the island has been intersected by good roads; and the late Lord Macdonald is said to have expended 100,000*l.* on the erection of buildings and other improvements on his estates! In consequence, the aspect of the country has been materially changed, its agriculture has been wonderfully improved; and the condition of its inhabitants, though still much depressed, is at present decidedly preferable to what it has ever been at any former period. — (*Parl. Paper*, No. 175, Sess. 1828.) Turf is the common fuel of all the islands: in most places it is exceedingly abundant; but in Monk, Tiree, Cannay, and Icolmkill, it is now procured with very great difficulty; a third part of the industry of the inhabitants being required to supply themselves with fuel. Their utmost efforts are, at times, insufficient; and the distress thence resulting is extremely severe. The Hebrides are estimated to have in all nearly 4,000 miles of sea-coast! They have, besides, many excellent harbours; the surrounding seas are well stocked with fish; and the inhabitants being familiarised to the sea, in passing from one island to another, it might be supposed that the fisheries would be in a flourishing condition; but, however, it may be explained, this is very far indeed from being the case. Most of the fishing villages erected by public co-operation have totally failed; and the herring fishery, in particular, has greatly declined. Even the abolition of the salt duties has not contributed to improve the Hebridean fisheries to any thing like the extent that was anticipated. Stornaway in Lewis, Tobermory in Mull, Portnahaven in Islay, and Rothsay in Bute, are the principal fishing stations. The kelp manufacture was carried on to a very large extent on the shores of some of the islands during the late war, and formed a prolific source of wealth both to landlords and tacksmen; but the heavy fall in the price of kelp caused by the abolition of the duties on salt, and the reduction of those on barilla, have gone far to destroy the manufacture, which has shrunk within comparatively narrow limits. It may, however, be doubted whether the loss, though severely felt at first, will be in the end so great as is imagined. The close attention required by the kelp manufacture during the summer months was extremely unfavourable to all sorts of agricultural operations, which were uniformly neglected, and in a peculiarly backward state in the islands where the greatest quantity of kelp was made. The marine plants, so valuable as a manure, were mostly, also, employed in the manufacture of kelp; so that it not only withdrew the necessary labour from the land, but took away the principal means by which its fertility could be either maintained or increased. Limestone is found in several of the Hebrides; and large quantities are used in Islay, and exported from it. In the latter island lead mines have been wrought for ages, but not with much spirit. Slates of good quality are quarried in Easdale and the adjacent islands, and are largely exported. Marble is found in Tiree and other places. Fingal's Cave, in Staffa, and its basaltic columns, are well known (*antè*, p. 258.). Manufactures, in the common acceptation of the term, are quite unknown: every family prepares its own articles of clothing. The women spin the wool and flax, and convert them into clothing. Every head of a family makes most of the utensils, implements, and furniture that they require. A few boat-builders, joiners, shoemakers, and tailors supply all the other articles wanted. In some places there are pretty good mills; but in others, corn is still principally ground by querns, or hand-mills. Trees do not grow well in the Hebrides, or only in a few sheltered spots, so that timber is scarce and dear, and considerable quantities are imported. The other imports are salt, iron, groceries, oatmeal, &c. The exports are principally black cattle, kelp, sheep, wool, cod and ling, herrings and fish-oil. The introduction of steam navigation has contributed more, perhaps, than any thing else to the improvement of the Hebrides, particularly the southern islands. They are now annually visited by great numbers of strangers; and the steam-packets create an extensive market for various articles for which they had formerly no demand, and furnish them with a ready means of conveying others to Glasgow, Greenock, &c. The Hebrides are divided into 31 parishes. Bute and Arran form together the county known by the name of Buteshire, which returns 1 member to parliament. The other islands are attached to the counties of Argyle, Inverness, and Ross. There is a good deal of Scandinavian blood in the Hebrideans; but the Gaelic is, notwithstanding, the prevailing language; and many of the inhabitants are ignorant of English. There used to be a great deficiency of churches, and there is still a great deficiency of schools. There are no poor rates in the islands, and no public beggars. The Catholic religion prevails in some parts.—For further particulars, see the valuable *Agricultural Survey of the Hebrides*, by James M'Donald, A.M.; *Anderson's Highlands*, &c. There is an excellent account of the Outer Hebrides, by Willian Macgillivray, A.M., in the eleventh number of the *Quarterly Journal of Agriculture*.

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* Mr. M'Donald says 110,000. — (*Survey*, p. 422.) Mr. Youatt supposes there may be, at present, 150,000 head of cattle in the Hebrides (*Cattle, their Breeds, &c.* p. 67.); but we have been assured that this is much beyond the mark.

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* Since 1814, the Duke of Hamilton has suppressed this system in Arran; and has otherwise greatly improved his property in that island, of which he is nearly the sole owner. It is also suppressed on the estates of Lord M'Donald, Mr. Campbell of Islay, &c.

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* The embarrassed state of some of the great landholders is the most formidable of all the existing obstacles to improvement.

Orkney and Shetland Islands. — These — most probably the *Thule* of the ancients — lie in two groups, to the north of Scotland, and form between them a county, which returns a member to parliament. The Orkneys (*Orcades*), the most southerly, are separated from the county of Caithness by the Pentland Frith, about 6 miles broad. They are comprised between the parallels of 58° 44′ and 59° 24′ north lat., and 2° 25′ and 3° 20′ west long. There are about a dozen principal islands; Pomona, or the mainland, being decidedly the largest. But, including the smaller islands (provincially, *holms*) and islets, the total number is estimated at about 67, of which about 40 are uninhabited. They are supposed to comprise an area of about 281,600 acres, and had, in 1831, a population of 28,847.

The Shetland, or Zetland, Isles, the most northerly group (perhaps the *Ultima Thule* of the ancients), are separated from the Orkneys by a channel 48 miles across, and lie principally between the parallels of 59° 52′ and 60° 50′ north lat., and 30′ and 1° 40′ west long. Including islets, they are supposed to exceed 100 in number; but the Mainland, or principal island, is a good deal more extensive than all the others put together. Between 30 and 40 are inhabited. They are about twice as extensive as the Orkneys; their total area being estimated at 563,200 acres. In 1831 they had a population of 29,392.

The aspect of these islands is pretty similar; but the Shetland group is the more rugged, wet, and barren of the two. They are generally fenced, particularly on the western side, with high, black, precipitous cliffs, against which the sea, when vexed by storms, dashes with astonishing fury. They are destitute of high mountains, the altitude of Mount Rona in Shetland, the highest, not exceeding 919 feet. Their general appearance is that of dreary, heathy wastes, interspersed with rocks, varied, sometimes, with swamps and lakes, and in a few places with beds of moveable sand. In some parts, however, particularly in Orkney, the land is abundantly fertile, producing good crops of corn and luxuriant herbage. Some of the islets, or holms, appear like gigantic pillars, rising perpendicularly from the sea: these are the resort of vast numbers of sea-fowl; and, in the breeding season, hunting for eggs and young birds forms one of the principal and most dangerous employments of the natives. Climate similar to that of the Outer Hebrides, except that the days are little longer in summer and shorter in winter. During the latter, the aurora borealis is uncommonly brilliant. The cultivated lands bear but a very small proportion to the others, being supposed not to exceed 25,000 acres in Orkney, and 22,000 in Shetland. Farms generally very small; few having more than 10 acres of arable land, and many not nearly so much. Agriculture is considered, particularly in Shetland, of subordinate importance, and, though a good deal improved, is still very backward. In Shetland most part of the ground is turned over with the spade; but in Orkney ploughs are in pretty general use. Oats and bere, or bigg (*hordeum hexastichon*), are the only white crops cultivated; and, except on a few improved farms, they follow each other alternately so long as the land will bear any thing, which it does for a very long time when well manured with sea-weed. The barley of Orkney is a great deal more abundant and of a much better quality than could have been anticipated; and, besides supplying the home demand, considerable quantities are exported. Potatoes are cultivated in all the islands, and form an important part of the food of the people. Turnips have, also, been planted, and have succeeded very well. At present no trees can be made to grow, and hardly a shrub is to be met with; which is the more singular, as the trunks of large trees are not unfrequently found imbedded in moss and sand, both in Orkney and Shetland. The hardy, spirited little horses, known by the name of *Shelties*, are bred in Shetland, and are exported in considerable numbers. The stock kept in the islands is estimated at from 10,000 to 12,000: they are never housed, nor receive any food, except what they gather for themselves. Some of them are exceedingly well-proportioned, active, and strong for their size. The horses of Orkney are in inferior estimation. Cattle very small, sometimes not weighing more than from 35 to 40 lbs. a quarter: they are shaggy, and not well shaped; but they are hardy, feed easily, and, when fattened, their beef is fine and tender. The stock in both islands is supposed to amount to about 45,000 head. The native sheep are of the small dun-faced breed; they yield short wool, which, though generally soft and fine, is sometimes as hairy as that of a goat. Recently the black-faced and Cheviot breeds, and even pure merinos, have been introduced into Orkney with considerable success. The stock in both groups of islands is believed to exceed 135,000. A small breed of swine is very abundant: they roam at large, and are not a little destructive. Rabbits are abundant in both islands, but particularly in the Orkneys; as many as 36,000 skins having been exported in a single season from the port of Stromness. Fowls are plentiful, and large quantities of eggs are exported from Orkney. The fisheries, however, in Orkney, as well as Shetland, are the grand object of pursuit. The islands are periodically visited by vast shoals of herrings; while the surrounding bays and seas are uniformly well supplied with cod and other species of white fish. *Divitiæ eis sunt a mari, ab omni parte summa piscandi commoditate objecta.* — (Buch., lib. i. § 50.) Brassay Sound, in Shetland, has always been one of the principal stations of the Dutch herring fishers; but the fishery there is now principally carried on by the islanders. During the 13 years ending with 1833, the exports of herrings from the Orkneys about doubled; having amounted in the latter to about 34,000 barrels; whereas in 1820 they only amounted to 17,989. During the year ending 5th of April, 1834, 36,855 barrels of herrings, and about 18,000 cwts. of cod, were cured in Shetland: but last season the herring take was much more considerable. About 100,000 lobsters are supposed to be annually shipped from the Orkneys for London. Vessels from British ports, bound for the northern whale fishery, mostly touch at Orkney or Shetland, and, besides taking on board supplies of provisions, usually complete their crews with seamen belonging to the islands, whom they put on shore on their way back. Rye straw grown in Orkney has been found peculiarly well fitted to serve as a substitute for the straw used in Italian plait; and the manufacture of this straw into plait has been carried on for several years to a considerable extent, and with pretty good success. Kelp, though comparatively unprofitable, continues to be extensively produced. Woollen stockings and gloves, sometimes of extraordinary fineness, are exported from Shetland. Messrs. Anderson, in their valuable work on the Highlands, give the following account of the —

Sums received in Orkney, in 1833, from Farm Produce, Manufactures, Fisheries, &c.

	£	*s.*	*d.*
Bere, or bigg, 5,178 bolls, at 15*s.* per boll of 6 bushels, or 20*s.* per quarter - - - - - -	3,883	10	0
White oats, 1,515 bolls, at 12*s.* ditto of ditto, or 16*s.* per quarter -	909	0	0
Malt, 10,696 bushels, sent to Leith, say 3*s.* per bushel - -	1,604	8	0
Peas, 234 ditto, at 3*s.* - - - - - -	35	2	0
Oatmeal, 40 bolls, at 14*s.* per boll of 140 lb. imperial - -	28	0	0
Horses, cows, and oxen, 954. 1 quarter horses, at 9*l.*; 3 quarter cows at 3*l.* - - - - - -	4,290	0	0
Ditto, not entered at custom-house, about 246 at ditto - -	1104	0	0
Eggs sent to Leith, 50 tons, 100 dozen per cwt., 100,000 dozen at 6*d.*	2,500	0	0
Sheep and swine, 40 of each, at 1*l.* - - -	80	0	0
Butter, about 2,000*l.*; hides, about 700*l.* - -	2,700	0	0
Rabbit skins, more than 2,000 dozen, at 5*s.* 6*d.* per dozen - -	600	0	0
Feathers, about - - - - - - -	250	0	0
Kelp, supposed scarcely to exceed 500 tons, at 4*l.* 10*s.* - -	2,250	0	0
Straw manufacture, including rent, cutting, planting, &c. - -	4,800	0	0
Herrings, 34,000 barrels, at 10*s.* per barrel - - -	17,000	0	0
Cod, fished by about 40 sloops of 30 tons, 14 tons each, at 13*l.* per ton - - - - - - -	7,280	0	0
Lobsters, caught by 432 men, in 216 boats - - -	1,800	0	0
Whale fishing, about 25 ships, taking 20 men each, 500 men, at 15*l.*	7,500	0	0
Hudson's Bay Company pay annually for the wages of men employed in Hudson's Bay about - - - -	1,500	0	0
Total -	60,114	0	0

We regret we have no similar account for Shetland; but we believe the sums received by its inhabitants do not differ materially from those received by their neighbours in Orkney. The shipping of the islands is considerable. In 1832, there belonged to the Orkneys 78 ships, carrying 3,918 tons and 319 men; and there belonged at the same time to Shetland 101 ships, carrying 3,880 tons and 775 men.

The people of these remote islands being of Scandinavian, and not Celtic origin, neither the Gaelic dress nor language has ever prevailed amongst them. All of them now speak English; but, of old, Norse was the prevalent language. The cottages of the poorer ranks are, in general miserable hovels, affording accommodation in winter to cows and fowls, as well as to the family. Owing to the scarcity or exhaustion of the moss, the want of fuel is in some islands very severely felt. On the whole, however, the inhabitants are decidedly better off than those of the outer Hebrides; being comparatively industrious, civilised, well clothed, and well fed. Kirkwall, in Orkney, and Lerwick, in Shetland, the only towns of consequence in the islands, had, in 1831, the former a population of 3,065, and the latter 2,750. The society in both is good, and the inhabitants hospitable.

Shetland, and some parts of Orkney, suffer much from the exaction of tithes: they are not only charged upon the produce of the land, but on that of the fisheries; and, being generally farmed, they are rigidly collected, are productive of much irritation, and are a formidable obstacle to improvement. Seeing the good effects that have resulted every where else in Scotland from the abolition of tithes, it is singular that they have not been commuted here. The feu duties payable to the Crown, or, rather to its donatory, Lord Dundas, have also contributed materially to check improvement. Marl, though neglected, is common in Orkney. Lead ore, also, has been met with; and limestone is of frequent occurrence. These islands are divided into 40 parishes. The gross rental of the land of Orkney amounted, in 1810, to 9,495*l.*; and that of Shetland, to 6,741*l.* Annual value of real property, in 1815, 20,930*l.*[*]

CHAPTER III.—IRELAND.

SECT. I.—*Name and Extent.*—*Face of the Country.*

Name.—It is believed, by many, that the Phœnicians visited Ireland; but, however this may be, it is mentioned by Aristotle and Strabo, by the name of *Ierne*, derived, most probably, from the native name, Erin. Cæsar, Tacitus, and Pliny call it *Hibernia;* and Pomponius Mela, and some manuscripts of Ptolemy, *Juverna.*—(*Cellarii, Notitia Orbis Antiqui*, tom. i. p. 440.) About the period of the withdrawal of the Romans from Britain, the Scoti, or Scotch, began to be distinguished as one of the principal Irish tribes: and the country seems to have then received from them the name *Scotia*, or Scotland. This appellation was applied to it by the monkish writers, till the eleventh century, when the term Scotia was transferred to the northern parts of Great Britain, by means of a colony of Scotch, from Ireland, which established itself in the West Highlands. The old name of Hibernia began to be revived; and, at a later period, it gave way to the Gothic term Ireland, supposed by some to be a modification of the native name, Erin, or land of the west.—*Camden's Britannia*, Gibson's ed., vol. ii. p. 1310; *Pinkerton's Geography*, ed. 1802, vol. i. p. 210.)

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[*] For farther information as to the Orkney Islands, see (exclusive of Messrs. Anderson's work, already referred to) *Wallace's Description of the Orkney Islands*, 8vo. Lond. 1700; *Barry's History of Orkney*, 4to. Edinburgh, 1805; and *Sheriff's Agricultural Survey of Orkney*, 8vo. Edinburgh. As to the Shetland Islands, see *Edmonston's View of Zetland*, 2 vols. 8vo. Edinburgh, 1809; *Hibbert's Description of the Shetland Islands*, 4to. Edinburgh, 1822; and *Sheriff's Agricultural Survey of Shetland*, 8vo. Edinburgh, 1814. Various tracts and works have been published on the fisheries and antiquities of the islands.

Situation. — Ireland lies to the west of Great Britain, between the parallels of 51° 25′ and 55° 23′ north latitude, and of 6° and 11° west longitude. Its figure approaches to that of a rhomboid; and, though it is in various places, particularly on the west coast, deeply indented by the sea, it is decidedly more compact than Great Britain. The Atlantic surrounds it every where except on its eastern shores, which are separated from Britain by the Irish sea; or, rather, by St. George's Channel, the Irish sea, and the North Channel. The first, or St. George's Channel, includes that portion of the sea lying between the coast of Wales and the coast of Ireland, from Carnsore Point to Dublin; the second, or the Irish sea, properly so called, extends from Dublin to Donaghadee, having the Isle of Man in its centre, North Wales on its south, Lancashire and Cumberland on its east, and Galloway on its north side; while the third, or North Channel, extends from Donaghadee to Rachlin Island, having on the opposite Scotch coast the Rhynns of Galloway, the Mull of Cantire, &c. From St. David's Head in Wales, across to Carnsore Point, the distance is about 47 miles; from Port Patrick, in the Rhynns of Galloway, to Donaghadee, the distance is 22 miles; but from the Mull of Cantire to Tor Point, in Ireland, is only 13½ miles.

Extent. — The longest line that can be drawn in Ireland extends from Brow Head, in the county of Cork, in lat. 51° 26′ N., long. 9° 44′ W., to Fair Head in Antrim, in lat. 55° 15′ N. long. 6° 3′ 30″ W., or about 306 miles; but the longest line that can be drawn in about the same meridian, is from the old head of Kinsale, in Cork, in lat. 51° 35′ N., long. 8° 31′ W., to the Bloody Farland Point, in Donegal, in lat. 55° 8′ N., long. 8° 17′ W., being a distance of about 237 miles. The longest line that can be drawn crosswise, in Ireland, in nearly the same parallel of latitude, extends from Emlagh Rash, on the west coast of Mayo, to Quintin Point, at the mouth of Lough Strangford, on the coast of Down, being about 182 miles. But in other places the breadth is much less. Thus between Ballyshannon and Dundalk it is only 85 miles; and between Tyrone, at the bottom of Galway Bay, and Dublin, the distance is not more than 108 miles. So conveniently, indeed, is Ireland situated, in respect of water communication, that there is no part more than 50 or 55 miles distant from the sea, or from one of its arms.

Area. — Having few well-ascertained data to go upon, the estimates of geographers have differed materially as to the area of Ireland. The first entitled to attention is that of Sir William Petty, employed by the government of Cromwell to complete a survey of the lands forfeited during the great rebellion of 1641. This has been called the Down Survey. Considering the time when, and the circumstances under which it was executed, it is a work of wonderful accuracy; and continues, to this day, to be referred to as evidence in courts of law.* It scarcely, however, embraced any part of the province of Connaught; and, in consequence partly of this circumstance, and partly of errors arising from other sources, Sir William Petty materially underrated the area of Ireland, having represented it as containing only about 10,500,000 Irish, or about 17,000,000 English acres.—(*Political Anatomy of Ireland*, p. 1.) Mr. Templeman, of Bury, estimated the area of Ireland at 27,457 square miles, or 18,372,480 acres. But this was little better than a guess; and all previous estimates were thrown into the shade by that of Dr. Beaufort. Having carefully collated the best county and other maps, and rectified not a few of their errors, the Doctor computed the area of the entire kingdom at "considerably more that 18,750 square Irish miles, or several thousand acres above 12,000,000 Irish measure; which is equal to 30,370 English miles, or 19,436,000 English acres."—(*Memoir of a Map of Ireland*, p. 14.) But even this estimate is nearly a million of acres under the mark. For it appears from a table furnished by Mr. Griffith, the engineer, to the Lords' Committee on Tithe, and which, being founded partly on the Ordnance Survey, and partly on other authentic data, can involve no material error, that the total area of Ireland amounts to 31,875 square miles, or to 20,399,608 acres. (*See Table opposite.*)

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* Copies of part of the maps composing the Down Survey were taken by Sir William Petty, for his own use; but, being shipped for England, the vessel in which they were embarked was captured by a privateer and carried to France, when the maps came into the possession of the French court. A number of the originals, that remained in Ireland, were subsequently much injured by fire, and some of them

Face of the Country.—Compared with Scotland, Ireland, though in many parts mountainous, may be said to be decidedly flat; and, notwithstanding the great extent of bog, the arable land bears a far larger proportion to the whole country than in Scotland; while the grass lands, when in tolerable order, have generally a deeper verdure and a more luxuriant vegetation. When compared with England, Ireland seems almost destitute of timber; there not being, in many extensive districts, a natural wood, plantation, or even a hedge, to be seen. The farm buildings and cottages are, for the most part, mean and wretched, and strongly impress the traveller with the most unfavourable conclusions as to the condition of their occupiers, which are but too much confirmed by their dress, habits, and appearance. The cultivated land seems to every one, however little acquainted with agriculture, to be ill-managed and dirty. But, perhaps, there is nothing that makes a deeper impression on an Englishman or a Scotchman, visiting Ireland for the first time, than the contrast between what are called the *desmesnes* (parks) of the nobility and gentry, and the immediately contiguous parts of their estates. In Britain, it is frequently very difficult, when one cannot see the wall or fence, to discriminate between what is, and what is not, park. But in Ireland this is a matter about which there can be no mistake. They differ as widely as light and darkness. Within the park we have wood, neat cottages, good farming, good teams, fine pasture land, and perhaps deer; but the instant we cross its boundary, we seem to be in a totally different region; and, in nine cases out of ten, not a tree is to be seen, and we meet only with hovels, the vilest management, miserable teams, and the most unequivocal symptoms of a want of capital and

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altogether destroyed; but their place has been supplied by copies taken by General Vallancey, and others, from the captured maps, now in the Royal Library at Paris. —(See *Report on the Survey and Valuation of Ireland*, Append. p. 133, &c.)

Table showing the Baronies and Parishes in each of the several Counties of Ireland; the Extent of each in Square Miles and English Statute Acres: specifying separately the Extent of Cultivated Land, of Unimproved Mountain and Bog, and of Lakes; and showing the Fractional Part of the entire Area of Ireland, supposing it to be 1,000, contained in each County: —

Provinces and Counties.	Number of Baronies.	Number of Prishes.	Extent in Square Miles.	Extent in English Statute Acres.	Whereof			Corresponding Proportions of each County to 1000, assumed as the Total Area of Scotland.
					Cultivated Acres.	Unimproved Mountain and Bog.	Lakes.	
LEINSTER.								
Carlow - -	5	50	344	219,863	196,833	23,030	„	10·777,805
Dublin - -	6	107	388	248,631	237,819	10,812	„	12·188,028
Kildare - -	10	113	613	392,435	325,988	66,447	„	19·237,379
Kilkenny -	9	127	803	513,686	417,117	96,569	„	25·181,170
King's - -	11	52	825	528,166	394,569	133,349	248	25·890,988
Longford -	6	23	412	263,645	192,506	55,247	15,892	12·924,023
Louth - -	4	61	322	206,261	191,345	14,916	„	10·111,028
Meath - -	12	147	886	567,127	561,527	5,600	„	27·800,877
Queen's - -	8	50	620	396,810	335,838	60,972	„	19·451,844
Westmeath -	12	62	604	386,251	313,935	55,982	16,334	18·934.236
Wexford -	8	142	882	564,479	545,979	18,500	„	27·671,071
Wicklow -	6	58	773	494,704	400,704	94,000	„	24·250,662
Totals	97	992	7,472	4,782,058	4,114,160	635,424	32,474	234·419,111
MUNSTER.								
Clare - -	9	79	1,254	802,352	524,113	259,584	18,655	39·331,736
Cork - -	16	269	2,765	1,769,563	1,068,803	700,760	„	86·744,951
Kerry - -	8	83	1,795	1,148,720	581,189	552,862	14,669	56·310,886
Limerick -	9	125	1,054	674,783	582,802	91,981	„	33·078,234
Tipperary -	10	186	1,583	1,013,173	819,698	182,147	11,328	49·666,298
Waterford -	7	74	736	471,281	353,247	118,034	„	23·102,454
Totals	59	816	9,187	5,879,872	3,929,852	1,905,368	44,652	288·234,559
ULSTER.								
Antrim - -	8	77	1,186	758,866	483,106	225,970	49,790	37·200,029
Armagh - -	5	20	513	328,183	267,317	42,472	18,394	16·087,711
Cavan - -	7	30	740	473,449	421,462	30,000	21,987	23·208,730
Donegal - -	5	42	1,820	1,165,107	520,736	644,371	„	57·114,186
Down - -	8	60	955	611,404	502,677	108,569	158	29·971,360
Fermanagh -	8	18	736	471,348	320,599	101,952	48,797	23·105,738
Londonderry	4	31	810	518,270	372,667	136,038	9,565	25·405,880
Monaghan -	5	19	511	327,048	309,968	9,236	7,844	16·032,073
Tyrone - -		35	1,179	754,395	555,820	171,314	27,261	36·980,858
Totals	54	332	8,450	5,408,070	3,754,352	1,469,922	183,796	265·106,565
CONNAUGHT.								
Galway - -	16	116	2,360	1,510,592	955,713	476,957	77,922	74·050,050
Leitrim - -	5	17	657	420,375	266,640	128,167	25,568	20·607,014
Mayo - -	9	68	2,117	1,355,048	871,984	425,124	57,940	66·425,198
Roscommon	6	56	952	609,405	453,555	131,063	24,787	29·873,368
Sligo - -	6	39	679	434,188	257,217	168,711	8,260	21·284,135
Totals	42	296	6,765	4,329,608	2,805,109	1,330,022	194,477	212·239,765
Gen. Total	252	2,436	31,874	20,399,608	14,603,473	5,340,736	455,399	1,000,000,000

enterprise. The fields in Ireland are generally smaller than even the smallest of those in England; and, if they be divided at all, it is usually with what are called turf dykes, which neither make good fences nor afford shelter, at the same time that they have a poor, miserable look. Such seem to be the leading characteristics in the appearance of Ireland. It must not, however, be supposed that they are every where to be met with; unfortunately, they are far too prevalent; but, in various parts, the aspect of the country is such as would do no discredit even to the best districts of England. May these exceptions to the general rule daily become more considerable!

Sect. II. — *Mountains, Level Lands, &c.*

Though some of the Irish counties are hilly, and others mountainous, it would be incorrect to say that such was the general character of the country. Several counties, to use the words of Dr. Beaufort, are tolerably level, and others quite flat. — (*Memoir of a Map of Ireland*, p. 10.) With the exception of the Wicklow mountains, and those of Mourne, in Down, the most mountainous parts of Ireland are on the west coast, particularly in Kerry, Clare, Galway, Mayo, Sligo, and Donegal. Macgillicuddy's reeks, near Killarney, in Kerry, are the highest of the Irish mountains. Gurrane Tual, the most elevated summit, has been determined by the Ordnance Survey to be 3,404 feet above the level of the sea. Mangerton, in the immediate vicinity of Killarney, formerly supposed to be the highest mountain in Ireland, is only 2,754 feet high. The general direction of the Kerry mountains is from west to east: a ridge runs from them along the south side of the Black-water, by which it is crossed, as far east as Cappoquin. North of this, in the south-western part of Tipperary, are the Knock-me-le-down and the Galtee mountains. The Devil's-bit and the Sliebhbloon mountains run in a south-east and north-west direction, for more than 30 miles, dividing the King's and Queen's counties: they form the line of demarcation between the rivers falling into the Shannon on the north-west, and the Suir, Nore, Barrow, &c. flowing to the east. Keeper, the highest point in this ridge, has an elevation of 2,265 feet. The famous pass, called the Gap of Glandine, leads across these mountains. The Wicklow mountains occupy an area of about 30 miles in length, and 12 in breadth. The highest amongst them, Lugnaquilla, has an elevation of 3,039 feet. Some of the glens in this mountainous tract are justly celebrated for their picturesque beauty. The Mourne mountains in Down lie to the north of Carlingford bay, and approach close to the sea. Sliebhdonard, the highest of the group, has an elevation of 2,796 feet. Donegal is much encumbered with mountains, but they do not, speaking generally, attain to any very great height: the highest, Errigal, has an elevation of 2,462 feet. The western parts of Connaught present a formidable barrier of mountains to break the fury of the Atlantic storms. Nephin in Mayo, one of the most remarkable mountains in this province, has been measured by Mr. Bald: the mean of whose observations gives its height 2,639 feet above the level of the sea. The height of Croagh-Patrick, overhanging the south side of Clew Bay, is 2,499 feet. It may, perhaps, be worth mentioning, that, according to the legendary history of Ireland, St. Patrick, having collected all the snakes and other venomous reptiles of Ireland on this mountain, precipitated them headlong into the sea! An altar or cairn is erected on its summit in memory of the event; and to it pilgrimages are still sometimes made. Muilrea in Mayo, on the north side of Killery harbour, has an altitude of 2,680 feet. The mountains called the Twelve Pins, in Connamara, a little to the west of Ardbear harbour, are very conspicuous landmarks, the highest of them rising 2,396 feet above the level of the sea. Generally, the Irish mountains are of easy ascent, admittiug of cultivation a considerable way up their sides; but some of them are precipitous, terminating in cones or spires.

Altitudes of the Principal Mountains in Ireland, as determined by the Ordnance Survey.

	Feet.		Feet.
Knocklayd, Antrim	1,685	Sliebhdonard, Down	2,796
Throstan	1,810	Sliebhbingian	2,449
Slemish	1,437	Eagle Mountain	2,084
Divis	1,568	Sliebhcroob	1,755
Sawel, Londonderry	2,236	Sliebhgullion, Armagh	1,893
Benbradagh	1,531	Belmore, Fermanagh	1,312
Carntogher	1,521	Carnmore	1,034
Sliebhgallion	1,730	Cuilcagh, Cavan	2,188
Errigal, Donegal	2,462	Benbo, Leitrim	1,365
Muckish	2,190	Lackagh	1,448
Sliebhsnaght, east	2,019	Sliebhanierin	1,922
Bluestack	2,213	Brandon, Kilkenny	1,696
Truskmore, Sligo	2,113	Keeper, Tipperary	2,265
Benbulbin	1,697	Devil's Bit	1,572
Sliebhbon, north, Roscommon	839	Sliebhnaman	2,362
———— south	857	Galtimore	3,008
Carnclonhugh, Longford	912	Craig, Clare	1,715
Nephin, Mayo	2,369	Knockaness	1,305
Croagh-Patrick	2,499	Callan	1,288
Muilrea	2,680	Knockfeerna, Limerick	937
Twelvepins, Galway (highest of)	2,396	Seefin	1,706
Beinnacoire	2,337	Brandon, Kerry	3,120
Carlingford, Louth	1,935	Gurrane Tual	3,404
Ravensdale	1,674	Mangerton	2,754
Kippure, Wicklow	2,473	Mount Gabriel, Cork	1,335
Great Sugarloaf	1,651	Caherfarna	2,234
Lugnaquilla	3,039	Sheehy	1,796
Mount Leinster, Carlow	2604	Hungra Hill	2,248
Sliebhbloom Arden Erin } Queen's County	1689	The Paps	2,280
		Monavullagh, Waterford	2,598

Level-Lands. — There is not in Ireland any fen land, and there are few or none of what are in England called valleys. But there are, notwithstanding, very large tracts of level land. From Dublin to the Bay of Galway, a vast plain stretches across the kingdom. It consists partly of rich cultivated land; but it contains within it a number of very extensive bogs, lying partly in Kildare, King's county, and Roscommon, and partly in Meath, Westmeath, and Queen's county. These bogs are included under the general designation of the Bog of

Allen. Though flat, this bog has a mean elevation of about 250 feet above the level of the sea; and several rivers that flow in opposite directions have their sources in it; the summit level of the grand canal which passes through its centre, is about 270 feet above the mean tide level in Dublin bay. The flat or red bogs, in different parts of the kingdom, are supposed to occupy nearly 1,600,000 acres.— (See *post.*) Exclusive also of the plain now mentioned, and of the flat bogs, there are very extensive tracts of flat rich land in Tipperary, Limerick, Meath, Clare, and other counties.

SECT. III.— *Rivers and River Ports.* — *Lakes.*

Owing to the greater similarity of the surface of the two countries, the rivers of Ireland partake much more of the character of those of England than of those of Scotland. Flowing, in general, for the greater part of their course, through a flat country, they are rarely rapid, and are but seldom interrupted by cataracts or ledges of rock. They are mostly navigable for a considerable way; and sometimes, indeed, as in the case of the Shannon and the Barrow, to within a short distance of their sources. They consequently give great facilities to the commerce of the country; affording convenient means for the exportation of its native produce, and for the importation of foreign materials of manufacture and consumption.

Shannon. — This is by far the largest and most important of the Irish rivers; and is hardly, indeed, inferior, if it be not superior, to any in the British Isles. It has in many respects, particularly in its nearly insulating an extensive province, in the direction of its course, the length of its navigation, and the magnitude of its æstuary, a striking resemblance to the Severn. Its source is generally traced to the base of Cuilcagh Mountain, in the north-west part of Cavan. After running a few miles, it falls into Lough Allen, about 10 miles long, and from 4 to 5 broad; its course thence to Limerick being south, with a small inclination to the west. Issuing from Lough Allen, it passes Leitrim, Carrick, Tarmonbury, &c., entering Lough Ree at Lanesborough. This, which is a very irregularly shaped extensive sheet of water, is about 17 miles in length. Leaving it, the river, now greatly augmented, passes Athlone, and then winds by Shannon Bridge and Banagher to Portumna, near which it expands into Lough Derg, a narrow lake 23 miles in length, with deep bays and inlets. Escaping from the southern extremity of this lake, it flows on to Limerick. Here, having met the tide, it takes a west-south-west direction; and, gradually expanding into a noble æstuary, unites with the Atlantic between Kerry Head and Loop Head, about 70 miles lower down.

From the Head of Lough Allen to its mouth, the Shannon has a course of about 214 miles; viz. Lough Allen, 10 miles; Lough Allen to Lough Ree, 43 miles; Lough Ree, 17 miles; Lough Ree to Lough Derg, 36 miles; Lough Derg, 23 miles; Lough Derg to Limerick, 15; and thence to the river's mouth, 70 miles. Loop Head and Kerry Head are about 8 miles apart.

But the distance to which it has been rendered navigable is the most extraordinary circumstance connected with the Shannon. In this respect, indeed, it is superior to the Thames, Severn, Trent, or any English river. If Lough Allen, be (as it is considered by some), reckoned its source, it is navigable to its very head; but, tracing its origin to the base of Cuilcagh Mountain, there are only 6 or 7, out of its entire course of about 220 miles, that may not be navigated! It is unecessary to insist on the value of a river of this sort flowing through the very centre of Ireland, insulating the great province of Connaught, and "washing the shores" of *ten* out of the *thirty-two* counties which the island comprises.

Unluckily, however, the navigation of the Shannon, like that of most other rivers not of very great depth, is, in certain places and at certain seasons, a good deal obstructed. It may be navigated, with no very serious difficulty, from the sea to Limerick by ships of 400 tons burden. But immediately above the city, and in some other places, its course is impeded by rocks and rapids, and large sums have been expended in improving those parts of the navigation, partly by making lateral cuts and partly by deepening the bed of the river. The level of Lough Allen is about 144 feet above high water mark at Limerick; the ascent being in a great measure overcome by one double lock and twenty single locks, placed in those situations where lateral cuts have been made to avoid the rapids. These cuts are from 13 to 14 feet wide at bottom, having the usual slopes, and are calculated for a depth of water varying from 4 to 7 feet in ordinarily dry seasons. Still, however, it must be admitted that considering its paramount importance, the navigation of the Shannon is by no means in a satisfactory state. In dry seasons it is impeded by shallows, on which there are sometimes only from 2 to 3 feet water; and during floods the channel of the river, owing to its frequently expanding into extensive lakes, and the lowness of its banks, is not easily discovered. Had it been an English river, these difficulties would have been overcome long ago; and the money expended upon it might, had it been properly and effectually applied, have sufficed to obviate them. But the works have not unfrequently been very unskilfully and insufficiently executed; and it will require a considerable additional expenditure to put them into proper order and to ensure at all times what is so very essential — a safe and easy navigation.

There is, also, it is said, a great deficiency of piers and landing places throughout the whole course of the river, and particularly on its western banks. But these may be supplied without difficulty, and at no great expense. The introduction of steam tugs and steams vessels on the loughs of the Shannon has been of infinite service. They have, in fact, done as much for it as for the Caledonian canal.

The importance of the Shannon, as a commercial river, has been materially increased by its junction with the Grand and Royal Canals from Dublin. Though defective both in their plan and execution, and made at an immense expense, still it is not to be denied that they are, particularly the Grand Canal, of great public utility. In connection with the Shannon, they have opened a communication by water across the island, so that persons living in its centre may send their produce, at a moderate expense, to Dublin or Limerick, as they find most advantageous. This laying open of new and almost boundless markets has given a stimulus to the improvement of the central parts of Ireland, of which it is not easy to overrate the influence, and which will, no doubt, be as permanent as it is powerful.

From its situation at the head of the æstuary of the Shannon, in a country naturally of the most exuberant fertility, 70 miles from the sea, Limerick is the principal emporium of the west of Ireland; and its commerce is both extensive and rapidly increasing. The value of the produce, such as corn, flour, bacon and pork, butter, beef, &c., shipped from the port in 1820, amounted to 525,625*l.*, whereas, in 1832 it amounted to 1,005,726*l.*, and, in 1835, when prices were very low, to 726,000*l.*

The badness of the accomodation for shipping is, however, a heavy drawback upon its trade. At low water ships are obliged to lie aground; and as the bottom consists of hard, rugged, limestone rock, *which has not even been smoothed*, vessels of considerable burden, and those that are sharp built, are liable to be seriously injured; and, in point of fact, a great deal of damage is annually sustained by the shipping in the port.

To obviate these inconveniences, it has been proposed to construct a floating dock in the bed of the river opposite the city. But this is a project which should not be rashly gone into. It may be doubted whether it be possible, at least with any reasonable outlay, to make Limerick a good port. The truth seems to be, that it is built 15 miles too high up. The navigation immediately below the city is, in many places, narrow, and encumbered with rocks; so that, even supposing a floating dock were constructed at the city, it would be necessary, to provide the requisite facilities for shipping, to expend a large additional sum on the removal of the obstructions in the river: and the tolls required to defray the cost of the dock and of these excavations would form a very heavy burden on the shipping using the port, and would go far indeed, to neutralise the influence of the improvement. Perhaps, therefore, the better plan would be to construct piers and warehouses about 15 miles lower down, alongside which large ships might lie safely afloat at low water; and, while this could be done for half the expense that a floating dock could be constructed, it would save all the expense of removing obstructions in the channel. The barges that navigate the Shannon above Limerick could carry down their cargoes to the new port, conveying back the imported goods destined for the city and for the interior. There may, no doubt, be difficulties in the way of this project of which we are not aware; but at present we are disposed to think it would be preferable to any attempt to improve the existing port. Something, however, should be done in the matter one way or another. In its present situation, the harbour of Limerick is a disgrace to its inhabitants, to Ireland, and to the empire.*

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* See Report by Messrs. Henry, Mullins, and M'Mahon, in the Appendix to the Evidence taken before the Committee of 1830, on the State of Ireland; and the Report by Mr. Rhodes on the Shannon Navigation. — (*Parl. Paper*, No. 731. Sess. 1832.)

The Shannon is easy of access. Both Loop Head and Kerry Head are bold and prominent; and, to prevent ships mistaking the one for the other, a light-house has been erected on the former. The first good anchorage within the river, without the reach of the tide, is in Carrigaholt Bay, to the east of Kilkadrane point, 3 leagues from Loop Head. A light-house has been erected on this point; and it is proposed to carry from it a pier to protect the south side of the bay There is also excellent anchorage in 6 fathoms water farther up the river on the east side of Inniscattery island; but the best anchorage is said to be still higher up to the south of Tarbert island, and in the bay between Mountshannon and Rinallen Point, and between the latter and Ilànagranoch island, in from 6 to 12 and 13 fathoms, with the ground clean and good. There is, indeed, within this noble river, ample and excellent accommodation for the largest fleets.

The Suck, the principal tributary of the Shannon, rises in Roscommon. Its course is south, inclining to the east, dividing the counties of Roscommon and Galway, by Castlereagh, Athleague, and Ballinastor, till it unites with the Shannon at Shannon-bridge. On its east side, the Shannon receives the Inny, the Upper and Lower Brosna, Mulkerna, Maig, Fergus, &c. The last two are navigable to a considerable distance.

Bandon. — Leaving the Shannon, and turning eastward by Cape Clear, the Bandon is the first river we meet with of any importance. It is described by Spencer as "the pleasant Bandon, crowned with many a wood." But most part of the timber that ornamented the country through which it flows in the reign of Elizabeth has been cut down, and its place is but very indifferently supplied by modern plantations. It was anciently called Glasheen: its course from the mountains of Carbery, where it rises, is nearly west to Bandon bridge; it then winds north-east to Innis Shannon, whence it pursues a south-east course, till it falls into the sea, a little below Kinsale, built on its æstuary. Kinsale is a good harbour for all sorts of ships, having at ebb tide, 12 feet water over the bar at its mouth.

Lee. — This river has its source in the small lake of Gougane Barra, in the western part of the county of Cork, on the confines of Kerry, 7 or 8 miles north from the bottom of Bantry Bay. Soon after it issues from its parent lake, it expands into Lough Allow. On its exit from the latter, it flows eastwards for about a dozen miles, when it receives a large accession of water from the Muskerry mountains. It pursues its easterly course through Cork to Little Island, 5 miles below the city, where it unites with the arm or inlet of the sea, forming Cork harbour.

The Lee is navigable as far as Cork for vessels of from 150 to 200 tons burden. But its port is properly at Cove in Great Island, in Cork Harbour, where the largest men of war may lie in perfect safety. The trade of Cork, including that of Cove, is very extensive. (For an account of the harbour see description of Sea Coast.)

Blackwater. — This, which is sometimes called the Broadwater, though inferior in commercial importance, is a larger river than either the Bandon or Lee. It rises on the mountains on the confines of

Limerick and Kerry, which it divides for a short way. Leaving Limerick its course is almost due south, forming for about 16 miles the line of separation between Cork and Kerry. At the round tower of Nahoval Daly, it takes an easterly direction, passing Newbridge, Mallow, and Fermoy, till it reaches Cappoquin. It then turns suddenly south; and, after a further course of about a dozen miles, it expands into Youghall Bay, meeting the sea immediately below the town. Its entire course may be estimated at about 100 miles.

Along its southern side, from Drishlane to Cappoquin, the Blackwater has a ridge of lofty mountains, while on the other side it has a large extent of flat and fertile country. It is rather rapid, and is more than usually liable to overflow its banks. At present it is hardly navigable beyond the reach of the tide, or, under favourable circumstances, as far as Cappoquin; but formerly it is said to have been navigable, up to Mallow, for vessels of considerable burden. — (*Lord Orrery's Letters*, p. 134.) There is a bar at the mouth of the river, which has only from 4 to 5 feet water at low, and but 13 feet at high, water neaps, so that it is not accessible by vessels drawing more than 12 feet water, which lie afloat in the river off the middle of the town. This deficiency of water, combined with the proximity of the harbours of Cork and Waterford, has done much to circumscribe the trade of Youghall within the narrowest limits. Still, however, it is a pretty considerable port for the exportation of corn and other raw produce.

The Blackwater receives several considerable tributaries, of which the Allow, Awbeg, Funcheon, and Bride are among the most considerable. Spencer lived on the banks of the Awbeg; and has immortalised it under the more poetical name of Mulla.

The Bandon, Lee, and Blackwater belong, the first two entirely, and the latter almost entirely, to the county of Cork. They run nearly parallel to each other, the Bandon about 7 miles south, and the Blackwater about 14 north from the Lee. They are all pretty well supplied with salmon.

Suir or *Sure.* — This important river rises in the Sliebhbloom mountains, in the north-east angle of Tipperary, near the source of the Nore: its course is south, inclining to the west through Tipperary, till, below the village of Ardfinane, it takes a south-easterly direction. But, on receiving the Nyre from the west, it fetches a sudden compass by the north to Clonmel: during the remainder of its course, past Carrick, till it falls into its æstuary below Waterford, its course is generally south. From its junction with the Nyre, it forms the line of demarcation between the counties of Tipperary and Kilkenny, and Waterford.

In a commercial point of view, the Suir is one of the most valuable rivers in Ireland. Vessels of 500 tons burden come up to Waterford, 15 miles from the sea, and lie safely in deep water alongside the quays; and the river is farther navigable by large barges as far as Clonmel. Owing to its favourable situation, and the excellence of its harbour, Waterford has a great and rapidly increasing trade. Besides being the natural emporium of the rich and extensive county of Tipperary, with the southern part of Kilkenny, and the west part of

Waterford, a good deal of the produce brought down by the Nore and the Barrow is shipped from it. Hence its commerce, which is already very extensive, will no doubt continue to increase with the improvement of the territory of which it is the grand outlet. The exports principally consist of corn and flour, butter, beef, bacon and pork, hides, tallow, &c. Their total value amounted in 1835, to the immense sum of 1,821,245*l.*

Nore. — This river has its source, as already mentioned, in the Sliebhbloom mountains, a little to the north-east of the source of the Suir. It flows southerly, but inclines to the east, through Kilkenny, Thomastown, and Innistioge, falling into the Barrow, about 2 miles above New Ross. For a considerable part of its course it is rather rapid, but it is navigable for considerable vessels as far as Innistioge, and for barges to Thomastown. It has been attempted, but found impracticable, to render it navigable as far as Kilkenny; and, in consequence, it is now in contemplation to cut a canal from that city to the Barrow.

Barrow. — Next to the Shannon, the Barrow is decidedly the most important of the Irish rivers. Like the Suir and the Nore it rises in the Sliebhbloom mountains, in the barony of Tinnehinch in Queen's county. Its course is first north-east to Portarlington, then east to Monastereven, and thence nearly due south past Athy, Carlow, Graig, and New Ross, about eight miles below which it falls into the grand æstuary of Waterford harbour, of which it forms the right arm.

The Barrow divides Queen's county from Kildare; and, after partially intersecting Carlow, it forms the boundary between it and Kilkenny, and between the latter and Wexford. It used to form the line of demarcation between the English pale and the native Irish.

Considering its moderate magnitude, the Barrow is navigable to a great distance; large ships ascending it as far as New Ross, which is its port, and barges as far as Athy, (above 60 miles in a direct line from the sea,) where it is joined by a branch from the Grand Canal. This length of navigation has not, however, been effected except at a very considerable expense, incurred in removing obstructions and deepening the bed of the river; and, like most other works of the kind in Ireland, they are not in a very satisfactory state.

But, notwithstanding its defects, the navigation of the Barrow has been of singular utility to Kildare, Queen's county, Carlow, and Kilkenny; seeing that it has not only opened to them a ready access to the important markets of Waterford and New Ross, but also to those of Dublin. It is not, therefore, very easy to exaggerate the stimulus it has given to improvement.

The basin of the three sister rivers, Suir, Nore, and Barrow, which have their embouchure in Waterford harbour, is very extensive. It includes Tipperary, Queen's county, Kilkenny, part of Kildare, Carlow, with parts of Wexford and Waterford.

Slane, or *Slaney.* — This, which is the last of the southern Irish rivers of any importance, rises in the barony of Talbotstown, in the Wicklow mountains. It flows south, with a good many windings through the county of Carlow. Having entered the county of Wexford at Newton Barry, it takes a south-easterly course to Enniscorthy;

and then, turning south, it falls into the arm of the sea denominated Wexford Haven, a little above the town of Wexford. It is navigable for barges as far as Enniscorthy, about 14 miles from Wexford.

Liffey. — With the exception of the Boyne, the Liffey is the only river on the east coast of Ireland that seems to require any notice in a work of this description; and it is distinguished more by having the city of Dublin on its banks, than by its own magnitude or importance. It rises in the Wicklow mountains, about 14 miles west from Bray. Its course is circuitous, being successively south-west, west, north-east, and east. After intersecting the capital, it falls into Dublin Bay. The Liffey is navigable as far as Carlisle-bridge in the city; but there are not more than 6 feet water on the bar at its mouth at ebb-tide.—(See description of Sea Coast.)

Boyne. — This, which is the largest and most celebrated of the rivers on the east coast of Ireland, rises in the Bog of Allen, near Carbery in Kildare, at an altitude of about 225 feet above the level of the sea. It flows north-east by Trim, Navan, and Slane, to Tulloghallen, where it takes an easterly course to Drogheda, uniting with the sea about 2 miles lower down. It receives in its course several considerable rivers, of which the Blackwater, from Lough Ramor, in Cavan, is the greatest.

The bar at the mouth of the Boyne has only about 2 feet water at low spring ebbs, and from 9 to 10 feet at high water. None, therefore, but the smaller class of vessels can come up to Drogheda. The river has been rendered navigable for barges as far as Navan.

The Boyne is celebrated for the important and ever memorable battle fought on its banks, about 3 miles above Drogheda, on the 1st of July, 1690; when the forces under William III. defeated those under James II., and decided the fate of the British empire.

Bann. — Of the northern rivers of Ireland, the Upper and Lower Bann and the Foyle are the most considerable. The Upper Bann rises in the plain called the Deer's or King's Meadow, in the northern part of the Mourne mountains in Down. Its course at first is winding; but its general direction is north-west. After passing Gilford and Portadown it falls into Lough Neagh, at Bannfoot Ferry. Near Portadown, it is joined by the Newry canal; and is thence navigable by barges to the lake.

The Lower Bann issues from the north-west arm of Lough Neagh; and, flowing north, with a little inclination to the west, falls into the sea 5 miles below Coleraine. The current of the Lower Bann is rapid; and in some places it is precipitated over ledges of rock. The salmon and eel fisheries on this river are both highly important and valuable. There are only 3 feet water over the bar at the mouth of the river at spring ebbs; and 10 feet at high water springs, and 8 at high water neaps. About half a mile up, the river dries at low water. It is, however, navigable as far as Coleraine, but only by boats, and that with difficulty.

Foyle. — This important river is formed by the concourse of various streams, which unite near Strabane in Tyrone. Hence it flows north by St. Johnstone and Londonderry, below which it falls into the inlet or arm of the sea called Lough Foyle. It is navigable to Londonderry by the largest class of merchantmen. From the city to St. Johnstone it is navigable by barges; and the navigation has been continued from the latter to Strabane, by a canal constructed at the expense of the Marquis of Abercorn.

In the lengthened coast from Lough Foyle, round to the Shannon, there are several rivers; but none of them of magnitude or importance enough to call for our notice.

Lakes.—Ireland has an immense number of lakes, provincially called loughs, some of which are very extensive. They are commonly divided into salt-water lakes and fresh-water lakes; but, as the former are really arms or inlets of the sea, they will be described with the sea-coast; so that, at present, we shall confine ourselves to the fresh-water loughs or lakes properly so called.

Lough Neagh is not only the largest lake in Ireland, but one of the largest in Europe. It lies in the centre of the province of Ulster, having the county of Armagh on the south, Tyrone on the west, Londonderry on the north-west, Antrim on the north and east, and Down, which barely touches it, on the south-eastern angle. It is about 17 miles in length, by about 9 in breadth, occupying, inclusive of Lough Beg (2,551¼ acres), which is joined to it, an area of 61,626 Irish, or 99,823¾ statute acres, at ordinary high water mark. — (See Plans of Lough Neagh in the *Third Report by the Commissioners on Irish Bogs.*) It is fed by several rivers of considerable magnitude; while the Lower Bann is the only channel through which its refluent waters find a passage to the sea. Though by far the largest, it is by no means the most beautiful of the Irish lakes. Its shores consist mostly either of a level strand, or marshy border, liable to frequent floods; and are, of course, deficient in those varied banks and bold promontories, without which such extensive sheets of water want picturesque effect, except when their uniformity is broken by islands; and of these there are only two small and uninteresting ones in this lake. Frequent squalls and want of shelter render its navigation rather dangerous for sailing vessels; but these inconveniences will most probably be obviated by the introduction of steam packets. According to Mr. Sampson (*Survey of Londonderry*, p. 118.), the mean level of Lough Neagh is about 38 feet above that of the sea; and it is said that nearly 10,000 acres of land contiguous to its banks, now annually flooded, might be made available for agricultural purposes by the outlay of a moderate sum on the removal of some obstructions in the channel of the Lower Bann. Its waters are celebrated for their petrifying quality.

Lough Erne appears sometimes as a river, and sometimes only as a lake. It is situated in the province of Ulster, and county of Fermanagh, stretches, in a straight line, north-west and south-east about 30 miles, and divides the county into 2 pretty equal portions. It, however, consists properly of 2 lakes, connected by a broad, winding channel, and containing together an area of, probably, about 40,000 acres.* Both lakes are full of islands, some of them large and thickly inhabited, many of them well wooded, and the whole so disposed and accompanied by such a diversity of coast as to form a vast number of rich and interesting prospects. The ancient and well-built town of Enniskillen stands on an island between the upper and lower lakes, being connected with the mainland by bridges on each side. On another island is a magnificent seat of the Marquis of Ely. This lough is elevated about 140 feet above the level of the sea. It receives the Erne, and several other rivers; and discharges itself at its north-west extremity, by a rapid current of about 9 miles, which, after falling over many ledges of obstructing rocks, precipitates its waters down a grand cataract into the sea at Ballyshannon.

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* Dr. Beaufort assigns to this lake an area of 76,311 English acres; but there can be no doubt that this is a great deal too much. — (*Memoir of a Map of Ireland*,

Lough Corrib, in the province of Connaught, and county of Galway, has a good deal of resemblance to Lough Erne. It is 24 miles in length, being 14 wide in the broadest part; but, in the middle, it is contracted to a narrow channel crossed by a ferry. According to Dr. Beaufort, it covers an area of about 31,300 Irish, or 50,700 Imperial acres; which does not differ materially from the area assigned to it in the Reports of the Commissioners of Bogs. It is of considerable importance as a channel of navigation for facilitating the transport of turf, lime, grain, sea-weed, &c. to a great extent of country. Its southern extremity is within less than 5 miles of the town of Galway, into the sea at which it discharges its superfluous waters; and as the level of the lough, even when highest, is said to be only 16 feet 9 inches above that of the sea, it would seem that a canal might easily be constructed across the isthmus between them. The country on the south and west sides of Lough Corrib is rugged, wild, and mountainous, but on the east and north sides it is comparatively level and fertile.

Lough Mask lies about 3 miles north from Lough Corrib, being partly situated in Mayo and partly in Galway. It is of an irregular shape, and covers about a third part of the surface covered by Lough Corrib.

Lough Conn (including Lough Cuttin), in Mayo, stretches about 11 miles in a north north-west and south south-east direction; but its greatest breadth does not exceed 4 miles; while, in one place, the distance across is less than 1 mile. It is navigated by barges. Its surface is said to be elevated about 30 feet above the level of the sea.

Exclusive of the above, and the loughs of the Shannon already mentioned, there are an immense number of loughs in different parts of Ireland. Of these, Lough Melvin, in Leitrim, and Fermanagh, is one of the most important. Exclusive of part of Lough Ree, there are, in Westmeath, seven considerable lakes; and in Clare, Cavan, and some other counties, they are still more numerous. Lough Dergh,

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p. 32.) Its area, as measured by Mr. Wakefield, on Arrowsmith's map, is 85 square miles, or 54,400 acres. — (*Account of Ireland*, vol. i. p. 9.) Mr. Griffith, the engineer, in his valuable table, already referred to (*antè* p. 327.) gives 48,797 acres for the area of all the lakes in Fermanagh, making the area of Lough Erne about 40,000 acres, and this, we have little doubt, is about the mark. Mr. Gorton (*Topographical Dictionary*, article Lough Erne) tells us, that Lough Erne is 43 miles in length; but this is bestowing upon it an imaginary elongation of at least 13 miles.

in the most southerly part of Donegal, is celebrated in the history of Irish superstition. A small island in it, called St. Patrick's Purgatory, is reckoned peculiarly holy, and was much resorted to in the dark ages. Boate, in his *Natural History* (p. 75. ed. 1652), says, that the frauds practised on the ignorant devotees having been detected and exposed in the reign of James I., "the pilgrimage to it had come to nothing, and had not since been undertaken." But, if so, the practice has been again revived; for St. Patrick's Purgatory is at present annually visited by crowds of pilgrims, who perform certain religious rites, which they believe to be of the greatest efficacy. — (*Inglis's Ireland in* 1834, vol. ii. pp. 169—181.)

The Lakes of Killarney, more celebrated for their beauty than their extent, lie in the midst of the Kerry mountains. They are 3 in number, but contiguous, and vessels pass from the one into the other. The largest, or lower lake, occupies an area of about 3,000 Irish acres; its western shore is bounded by the mountains of Tomies and Glenna, the former 2,150, and the latter 2,090, feet above the level of the sea, having their precipitous sides well clothed with forest trees: on the opposite shore there is the fine and striking contrast of flat land, in a high state of cultivation. There are no fewer than 33 islands, many of them extremely picturesque, in the lower lake. This lake is, in some parts, very deep. Between Glenna Mountain and Ross Island, the soundings give 42 fathoms; and as the surface of the lake is about 50 feet above the level of the sea, it follows that its *bottom* is 202 feet below that level. The middle lake occupies about 640 Irish acres; it lies immediately under the Fore or Turk Mountain, elevated about 1,900 feet above the level of the sea. The strait which joins the middle and upper lake is about 3 miles in length, having in many places the appearance of a beautiful river. The upper lake contains about 720 Irish acres. It lies in a hollow, formed by some of the most stupendous mountains in Ireland, among which are Mangerton and Gurran Tual, already alluded to, so that its scenery is in the highest degree magnificent and sublime. "Here," says Mr. Wakefield, "Nature assumes her roughest and most terrific attire to astonish the gazing spectator, who, lost amid wonder and surprise, thinks he treads enchanted ground; and, while he scarcely knows to which side he shall direct his attention, can hardly believe that the scenes he sees around him are not the effects of delusion, or the airy phantoms of the brain, called into momentary existence by the creative powers of a fervid imagination. Here rocks piled upon rocks rise to a towering height; there one mountain rears its head in succession above another, and sometimes a gigantic range seems to overhang you, forming a scene that may be more easily conceived than described. Such sublime scenes cannot be beheld but with a mixed sensation of pleasure and awe, and on a contemplative mind they must make a deep and lasting impression." — (Vol. i. p. 66.) In other places, however, especially on the eastern shores of the lower and middle lakes, the scenery is of the softest and most agreeable kind, consisting of finely wooded promontories, ornamented with rivers and seats, verdant islands, &c. And it is in the contrast between these and whatever is most wild and rugged that we find the great charm of Killarney. These lakes have been often described, but never so well as by Mr. Young.

The total area of the Irish lakes amounts, according to Mr. Griffith (*antè*, p. 327.), to 455,399 statute acres; of which 32,474 acres are in Leinster; 44,652 in Munster; 183,796 in Ulster; and 194,477 in Connaught.

The Waterfall at Hungra Hill, in Cork, may be mentioned in this place. It is described by Dr. Smith in his *Ancient and Present State of the County of Cork.* "Not far," says he, "from Ross Mac Owen is one of the highest and largest waterfalls in this kingdom. This cataract is very visible from the town of Bantry, at least 14 miles distant from it. The water is collected from various small rivulets and springs, forming a large lake on the top of a vast, high, rocky, and almost perpendicular mountain called Hungra Hill, at least 700 yards above the level of the bay of Bantry. The water cascades from the top of this mountain, in a beautiful sheet at least 10 yards broad, which expands as it falls; about half the height of the mountain it dashes perpendicularly on a prominent rock, from whence a mist arises, almost the third part of the hill, which, in some particular stations, the sun's rays playing upon it and meeting the eye of the spectator must make a charming appearance; these kind of mists in such positions, generally reflecting the colours of the iris: hence it falls from rock to rock, till it has passed the rugged declivity of Hungra Hill; and, before it joins the ocean, it has another fall, cascading in an arch over a lower hill, all which make a fine sight as one sails up and down the bay."—(Vol. i. p. 28., ed. 1774.) It may, however, be worth while to observe, that doubts are entertained as to the accuracy of some of the measurements given by Dr. Smith.

SECT. IV.—*Sea Coast and Sea Ports.*

Ireland has a circuit of about 250 leagues of coast, great part of which is deeply indented, particularly on the west and south-west, by arms of the ocean; forming some of the noblest havens in the world. It is said to possess, in all, 14 harbours for the largest ships, 17 for frigates, and from 30 to 40 for coasting vessels, exclusive of upwards of 24 good summer roads.

The æstuary of the Shannon is one of the largest and safest asylums for shipping on the Irish coast; but, having noticed it in our account of the rivers of Ireland, we shall begin our survey with the coast to the south of the Shannon, and, proceeding round by Cape Clear, &c., complete the circuit of the island by returning to its estuary.

Immediately to the south of Kerry Head, a bold, bluff, promontory at the southern extremity of the Shannon, there is a large expanse of water, the northern part of which is called Ballyheigh, and the other, within Machri Point, Tralee Bay. The former is very dangerous, and the latter by no means safe anchorage ground; but ships, mistaking Kerry Head for Loop Head, sometimes enter here, to their great risk, supposing it to be the Shannon. Seven small islands, called the Hogs, lie off Machri Point. Near this part of the coast are many sand hills, formed by the wind, and on some parts the sea gains considerably.

Other parts of the Kerry coast are extremely rugged; and offer to the view some of the highest mountains in Ireland. The peninsula of Dingle terminates in Dunmore Head, in lat. 52° 13′ N., long. 10° 54′ W., being the most westerly point of Ireland, and, consequently, of what may be called the mainland of Europe. It is full of mountains; Mount Brandon, on the north coast of the peninsula, a noted landmark, rises 3,120 feet above the sea. Brandon Bay derives its name from this hill. Off Dunmore Head lie the Blasquet islands, 13 in number: tradition reports that the largest was formerly joined to the mainland. The intervening sound is of great depth, a consequence, probably, of the violence with which the currents of ebb and flood run through it. One of the ships belonging to the Spanish Armada was wrecked here in 1588. Dingle Bay, a large arm of the sea, having Dunmore Head at its northern, and Valentia island at its southern, extremity, stretches inwards to the bottom of Castlemaine harbour. Dingle harbour, on the north side of this bay, is fit for small vessels only, and these lie aground on soft mud at low water. Ventry harbour, a little to the west of Dingle harbour, is of easy access, and capable of receiving the largest ships; but in westerly winds it is subject to heavy squalls. Castlemaine harbour, at the bottom of the bay, is of difficult access; it has a bar at its mouth, on which there are only 9 feet water. Valentia island, at the southern extremity of Dingle Bay, has a very excellent roadstead called Valentia harbour, between its north-eastern extremity and Inchbeg island. A pier has been constructed here at Ringlass; and it has been proposed to establish steam-packets from this place to New Brunswick. Valentia harbour is decidedly the best on the coast of Kerry, and is, besides, an excellent fishing station. The rocks called the Skelligs, lie south south-west from Valentia island, and about 7½ miles west from Bolus Head. Two light-houses have been erected on the greater or outermost Skellig. This is a large, high, precipitous, and not very accessible rock. Formerly, however, it was the residence of some monks; and was, from its supposed sanctity, visited by numbers of pilgrims. — (*Smith's Kerry*, p. 113. ed. 1774.)

Turning Bolus Head, Ballynaskellig Bay opens to the north; and at about half a dozen miles from its eastern extremity, we meet the great arm of the sea called, with little propriety, Kenmare river. It has deep water and clean ground in almost every part. Kilmichaeloag harbour, on its south side, is well sheltered, and is capable of receiving large ships.

After doubling the peninsula of Bear, having Dursey island at its extremity, we arrive at Bantry Bay in the county of Cork. This is one of the finest and most capacious harbours in Europe. It stretches inwards, in a north-easterly direction, nearly 30 miles, with a breadth varying from 4 to 6. Near the entrance of the bay, on its north-west side, is Bear Island, separated from the mainland by a crooked strait about a mile broad, having from 10 to 30 or 40 fathoms water, and affording a safe retreat for the largest vessels. Farther up the bay is Whiddy island, on the south side of which, nearly opposite to Bantry town, there is an admirable roadstead, where ships lie landlocked in from 24 to 40 feet water. Bear island forms, as it were, a natural breakwater, protecting the bay from the south-west winds. There is close to both shores a considerable depth of water; it is not encumbered by any shoals or rocks, that may not be easily avoided even at night; and the anchoring ground being every where good, it furnishes throughout its whole expanse convenient shelter and accommodation.

Having no considerable town on its shores, which are wild and rugged, nor any communication with the interior, this noble bay is but little frequented by shipping. Occasionally, however, it has been resorted to by large fleets, and has been the theatre of naval warfare; an indecisive action having been fought in it on the 30th of April, 1689, between a portion of the French fleet that conveyed King James to Kinsale, and the English fleet under Admiral Herbert, afterwards Earl of Torrington. It was in it, also, that the French under Hoche disembarked in 1796.

Dunmanus Bay is separated from that of Bantry by a narrow peninsula, terminating in the promontory of Sheep's Head; opposite to which, on the southern side of the bay, is Three-Castle Head. This bay runs about 15 miles up the country: it is easy of entrance, has deep water, and good anchorage ground almost all over; but, being open to the western gales, and so near Bantry Bay, it is seldom visited. Two and a half miles south from Three-Castle Head, is Mizen Head, formerly supposed to be the most southerly promontory of the mainland of Ireland, and hence the name of *Notium Promontorium* given to it by Ptolemy; but it is now ascertained that this distinction is due to Browhead, about 2 miles east from Mizen Head. North-east from Browhead, distant 4 miles, is Crookhaven, which, as Dr. Campbell has observed, would, in any other country except Ireland, and even any where else in it except Cork, be deemed an admirable port. — (*Survey of Britain*, vol. i. p. 435.) It is of a medium size, easy of access; has secure anchoring ground, and about 3 fathoms water at ebb tide. The only swell in it is occasioned by the easterly winds, but it rarely occasions any inconvenience.

From Mizen Head to Cape Clear, the course is east by south, 4 leagues. This cape, in lat. 51° 24′ 55″ N., long. 9° 29′ W., rising high above the sea, is the southern promontory of Clare island, about 6 miles from the mainland of Ireland. It has been surmounted by an excellent light-house; and is the point from which ships leaving St. George's Channel for the westward usually take their departure, and those arriving prefer making it their land-fall. The Fastnel rock lies about 6 miles south-west from Cape Clear.

North by east from Cape Clear, is Baltimore peninsula, forming the east side of a spacious bay, in which there are many islands and ports. From Baltimore Point to the Old Head of Kinsale, the general direction of the coast is north-east, presenting, in succession, Castlehaven harbour, Glandore harbour, Ross Bay, Clonakilty Bay, and Courtmascherry Bay; none of which, however, are very suitable for the purposes of navigation. The Old Head of Kinsale, a narrow peninsulated promontory, at the extremity of which is a light-house, has on its east side the entrance to Kinsale harbour. This safe and excellent port is formed by the æstuary of the Bandon, at the mouth of which is a bar with 12 feet water at ebb tide. At the anchorage within the bar, off Cove or a little higher up, there are from 4 to 5 fathoms water within half a cable's length of the shore.

From Kinsale, the coast sweeps round by the north-east to Mountain Head, opposite to which is Poole Head, the two extremities of the bay, at the bottom of which is Cork harbour. Roche's Point, a bold headland, on which a light-house was erected in 1817, marks the eastern side of the fair way into the port. The entrance, which is deep and narrow, is guarded by Fort Camden on the west, and Fort Carlisle on the east, side. With a leading wind, men-of-war may enter at any time of the day, without regard to the tide. Within, the harbour stretches out into a magnificent basin, interspersed with several islands, land-locked and sufficiently extensive to accommodate the entire navy of England. Cork itself is situated at the north-west extremity of the harbour, on the river Lee, and is accessible only by vessels of from 150 to 200 tons burden; so that Cove, a thriving town on the south side of Great Island, fronting the grand basin, is the proper emporium of the harbour. Besides the forts at the entrance, it is farther protected by fortifications constructed on Spike and Hawlboline, two small islands opposite Cove. Ships of the largest class come close to the quays; the anchorage is excellent; nor is it possible, indeed, to imagine a finer port. During war, Cork harbour is the principal rendezvous for the West India fleets. The city has always enjoyed a large share of the victualling trade; and, notwithstanding the rivalry of Waterford, it is still decidedly at the head of the southern ports as a commercial emporium. The value of the exports from Cork, in 1835, amounted to 2,909,746*l.*: they consisted almost entirely of provisions, corn and meal, and live stock.

Leaving Cork, the coast trends north-easterly to Youghall, at the mouth of the Blackwater. The sea has evidently encroached on the shore in its vicinity, the beach at low water mark being a bog covered with sea sand, under which are found the remains of trees. Youghall lies on the west side of the river, immediately within its mouth. At ebb tide there are only 4 feet water on the bar, and 13 feet at high water neap tides. Generally, therefore, it is not accessible to ships drawing more than 12 feet water. — (See *antè*, p. 333.)

From Youghall the coast of Waterford runs east to Ram Head, and then north-east to Mine Head and Helwick Head. North and west of the latter are Dungarvan Bay and harbour. At the town of Dungarvan there are only 9 feet water at springs; and the anchoring ground in the bay is narrow and indifferent.

About 20 miles east from Dungarvan is Tramore Bay, one of the most dangerous places on the Irish coast. In hazy weather it is sometimes mistaken by ships for Waterford harbour; most of those that have fallen into this error having been wrecked on its inhospitable shores. The flood sets with great force into the bay: the winds from the south south-east round to the west south-west also throw in a heavy sea; and, as the ground is foul and rocky, the only chance of escape, for a vessel embayed under such circumstances, consists in her being able to run ashore on the north-west coast. Conspicuous beacons have been erected on Newton and Branstown heads, on the west and east extremities of the bay; and ships in passing ought to keep a good offing, lest, by getting entangled in the tide, they be drawn on to almost certain destruction.

About 5 miles east from Branstown Head is Red Point, the south-western extremity of Waterford harbour. Hook Head, at the extremity of the opposite shore of the harbour, is surmounted by a conspicuous light-house. The distance across is about 2 miles. On the western side of the harbour, about a mile within Red Point, is the artificial port of Dunmore. It has a lengthened pier, and is the station of the steam packets that ply between Milford Haven, Bristol, and Waterford harbour. The city of Waterford and the town of New Ross lie, the former on the river Suir, 15 miles from sea, and the latter on the Barrow, nearly 20 miles inland. Such is the depth of water in this excellent harbour that, as already mentioned, vessels of 500 tons burden ascend to Waterford, and at low water, lie afloat in the river opposite the city. — (See *ante*, p. 334.)

Carnsore Point, the southern headland of the east coast of Ireland, bears from Hook Head east by north, distant about 27 miles. The intervening coast has no good harbours, and is fenced by several dangerous rocks and islands. A light vessel is moored off Coningbeg, the most southerly of these rocks or islets, nearly 8 miles from shore.

About 7 miles east by north from Carnsore Point is the Tuscar, a remarkable rock, elevated 20 feet above the level of the sea at high water. A light-house, modelled on that of the Eddystone, has been erected on this rock, which not only warns the mariner of his approach to it, but of the still more dangerous sunken rocks by which it is surrounded.

North-west from the Tuscar rock, distant about 14 miles, is the entrance to Wexford harbour. It is spacious, but shallow, encumbered with shifting sands, and has a bar at its mouth. From Wexford to Dublin Bay there is not a single tolerable port; and the coast is fenced throughout by dangerous banks, particularly off Arklow. The limits of Dublin Bay are Dalkey Island on the south, and Howth Head on the north, about 6 miles apart. The south shore rises like an amphitheatre towards the lofty mountains of Wicklow; the north shore being lower and more level, except at its extremity formed by the head. The bay is exposed to the easterly gales, and there is a bar at the entrance of the harbour, with only 6 feet water at ebb tide. In the view of lessening this bar, and obtaining a greater depth of water by preventing the current of the Liffey from diffusing itself over the banks called the Bulls, a wall has been built along its southern side projecting many yards into the bay, and terminated by a battery; but this expensive erection has not proved to be of any material utility. And, in order to afford an asylum to large ships using the port, a pier harbour has been constructed, at an immense expense, at Dunleary or Kingstown, on the southern shore of the bay, without the bar, within which the largest ships may lie in safety in from 2¼ to 4 fathoms water. A communication by a railroad has been established between Kingstown and Dublin, which has gone far to render the former the port of the latter. Immense sums have also been expended on the construction of a harbour to the north of Howth Head, opposite to the little island called Ireland's Eye. Here the mails to and from Holyhead are despatched and received; but the water is not sufficiently deep to allow of large ships riding in the harbour at ebb tide. Spring tides rise in Dublin Bay 12 feet, and neap tides 6 feet; so that ships of 16 or 17 feet draught may sail into the harbour at high water springs, and those of 12 feet draught at high water neaps.

Dunany Point, in Louth, bears from Howth Head north by west, distant about 10 leagues. In the intermediate coast is Drogheda, already referred to (*ante*, p. 336.), and some other tide havens, but no good harbour. Between Dunany Point on the south, and Cooley Point on the north side, lies the extensive bay of Dundalk. It is generally shallow; and mostly, indeed, dries at low water.

A little to the north-east of Cooley Point is Greenore Point, the south-western extremity of Carlingford Lough, an arm of the sea stretching north-west to Narrow-water, below Newry. It is about 2 miles wide at its mouth, across which is a bar with only 9 feet water over it at low spring ebbs, so that it is available only at certain times of the tide. A light-house has been erected on each side the entrance to the bay.

The shores on the north side of Carlingford Lough, and round to Dundrum, are bold and precipitous, the Mourne mountains coming down close to the water's edge.

From Dundrum Bay, on which are some fishing havens, the coast runs north by east to Lough Strangford, having Killard Point at the western, and Ballyquintin Point at the eastern, extremity of its embouchure. The channel leading to the Lough is about 6 miles in length, when it expands into a very large basin, extending north to Newton Ardes, about 15 miles, and having a mean breadth of 5 or 6 miles. It is well sheltered, has deep water, and the anchoring ground is good.

According to Mr. Mackenzie, who surveyed the coasts of Ireland by order of the Admiralty, there is a bar at the entrance to Lough Strangford with only 12 feet water at ebb tide; and a recent authority, Captain Mudge says that with a weather tide the sea breaks with great violence over the bar except at slack water. — (*Norie's Sailing Directions for St. George's Channel, &c.*, p. 87.) But Mr. Nimmo, the engineer, in his evidence before the committee of the House of Commons, on the survey and valuation of Ireland, in 1824, stated that he had sounded the entrance, and found 5 fathoms water over the place where the bar is laid down in the Admiralty charts! It is, indeed, clear, from the rapidity with which the ebb tide runs out of the lough, that no bar, unless it consisted of rocks or other very solid matter, could exist in its mouth. The rapidity of the tides, and some sunken rocks on the east side of the entrance, are the only dangers to be encountered, and they are considerable enough to make the bay be shunned by all strangers. — (*Min. of Evidence*, p. 92.)

North by east, about 2 leagues from Ballyquintin Point, is the South Rock, one of a dangerous cluster of rocks lying off Kerry Point. A light-house has been erected on it.

From Kerry Point the coast runs north, inclining a little to the west, to Donaghadee. Its harbour is naturally very indifferent; but, owing to the importance of its situation, which is the best for the despatch and reception of the mails to and from Port Patrick, large sums have been expended on its improvement, and it is now rendered a pretty good pier harbour.

The Copeland Islands lie about 2 miles north north-east from Donaghadee. A light-house is erected on one of the most northerly.

This light-house serves to mark the entrance to Belfast Lough. This considerable arm of the sea lies between Nouthead in Down, and Blackhead in Antrim, about 8 miles apart, whence it extends as far inwards as Belfast, situated at its southern extremity. It is of easy access, and has, in many places, good anchorage. But the water shoals before it reaches Belfast, so that large vessels can only come up with the flood tide. Carrickfergus lies on the north shore of Belfast Lough, near Kilroot Point.

To the geologist, the coast of Antrim is the most interesting in Ireland. It is generally bold and precipitous, consisting in several places, particularly at Fair Head, Bengore Head, the Giants' Causeway, &c., of vast masses of basaltic columns. With the exception of Larne Lough, fenced from the sea by the narrow and lofty peninsula called Magee Island, it has no good harbour. Fair Head, the *Robogdium Promontorium* of Ptolemy, and the north-eastern extremity of Antrim and of Ireland, is elevated, according to the Ordnance Survey, 636 feet above the level of the sea. It presents a vast mass of rude, coarse, columnary stones, some of them being above 280 feet in length; and at the base of these gigantic columns lies a wild waste of natural ruins, of an enormous size, which, in the course of ages, have been tumbled down from their foundation by storms, or some more powerful operations of nature. A savage wildness characterises this great promontory, at the foot of which the ocean rages with uncommon fury. Scarcely a single mark of vegetation has yet crept over the hard rock, to diversify its colouring; but one uniform greyness clothes the scene all around.—(*Hamilton's Letters on the Coast of Antrim*, 12mo ed. p. 96.) North by east from Fair Head, distant about 3 miles, is the crescent-shaped island of Rachlin or Ragherry, the *Ricina* of Ptolemy. It is 5 or 6 miles long, but only about three fourths of a mile in breadth. Its shores are steep and rocky, with deep water all round. The phenomenon of the mirage, similar to the *fata morgana*, is often observed in the strait that separates this island from the mainland.

From Fair Head the coast bends inwards to Ballycastle, a harbour fit only for small vessels; and thence north-west to Ballintoy Head, about 5 miles west by north from which is Bengore Head. This remarkable promontory is made up of a number of capes. Of these the most perfect and striking is Pleaskin. "Its summit," to use the words of the Rev. Mr. Hamilton, "is covered with a thin grassy sod, under which lies the natural rock, having generally a uniform hard surface, somewhat cracked and shivered. At the depth of 10 or 12 feet from the summit, this rock begins to assume a columnar tendency, and forms a range of massy pillars of basalt, which stand perpendicular to the horizon, presenting in the sharp face of the promontory, the appearance of a magnificent gallery or colonnade of upward of 60 feet in height.

"This colonnade is supported on a solid base of coarse, black, irregular rock, near 60 feet thick, abounding in blebs and airholes;

but though comparatively irregular, it may be evidently observed to affect a peculiar figure, tending, in many places, to run into regular forms, resembling the shooting of salts and many other substances during a hasty crystallisation.

"Under this great bed of stone stands a second range of pillars, between 40 and 50 feet in height, less gross and more sharply defined than those of the upper story, many of them, on a close view, emulating even the neatness of the columns in the Giants' Causeway. This lower range is borne on a layer of red ochre stone, which serves as a relief to show it to great advantage.

"These two admirable natural galleries, together with the interjacent mass of irregular rock, form a perpendicular height of 170 feet; from the base of which, the promontory, covered with rock and grass, slopes down to the sea, for the space of 200 feet more, making in all a mass of near 400 feet in height, which, in beauty and variety of its colouring, in elegance and novelty of arrangement, and in the extraordinary magnitude of its objects, cannot readily be rivalled by any thing of the kind at present known." — (*Letters on the Coast of Antrim*, 12mo ed. p. 91.)

Proceeding westward from Bengore Head, we very soon fall in with the Giants' Causeway. This extraordinary basaltic promontory consists of three distinct piers or quays, rising from the bottom of a precipitous cliff full 400 feet above the level of the sea. The chief pier is seen at low water extending above 1,000 feet in length, and the others not quite so much. They consist of polygonal stone pillars, from 40 to 55 feet long, having from 3 to 8 sides; but those having 6 sides are by far the most common. The surface formed by the summits of the pillars is smooth, and the joints so close that the blade of a knife can hardly be introduced into them. The pillars are divided into segments, admirably fitted to each other, varying from 6 inches to a foot in thickness. At Fair Head and Bengore Head, the columns are higher; but their angles are not so sharp, and they are altogether of a coarser texture than those of the Giants' Causeway. The same sort of basaltic columns, though of a less perfect form, extend along the coast for several miles, and, being sometimes detached from the shore, have at a distance the most grotesque appearance. Rachlin Island contains similar columns: they extend a good way inland.

From the Giants' Causeway the coast continues bold and rocky, till we reach the mouth of the Lower Bann, when it becomes low and flat, and continues so nearly to the magnificent headland of Magilligan, situated at the mouth of Lough Foyle. This is an extensive triangular basin, 18 miles long, by about 10½ in its greatest breadth. At its mouth, between Magilligan Point and Green Castle, it is contracted to less than a mile in width, having, on the west side, from 8 to 10 fathoms water. On the east side of the entrance, there is a large sand bank called the Great Tuns, over which the sea sometimes beats with much violence. The navigation of the Lough is confined to a narrow channel along the Donegal or Inuishowen shore, the rest being occupied by extensive shoals and sand banks; part of which have been effectually reclaimed from the sea, and a design is now on foot for reclaiming more. Vessels of 400 tons may ascend the Lough, and the Foyle as far as Derry, about 23 miles from the entrance to the

Lough. On the whole, however, its navigation is rather contracted and difficult, and requires considerable attention. Two light-houses are now being erected on Innishowen Head, intended to serve as guiding lights past the Great Tuns bank, and into the navigable channel leading to the city. — (*Ordnance Survey of Londonderry*, p. 242.)

The coast of Donegal is mountainous, wild, and dreary. Its northern extremity, Malin Head, in lat. 55° 22′ N., long. 7° 23′ 30″ W., is the most northerly land in Ireland. Leaving this point, the coast turns southerly into the capacious inlet known by the name of Lough Swilly, supposed to be the *Argita* of Ptolemy. Donaff Head is its eastern, and Fannet Point, crowned with a light-house, its western, extremity. From its mouth it extends nearly 25 miles into the interior. It is a fine basin: the water is deep; and opposite to Buncranagh, on its eastern side, is a roadstead where the largest men-of-war may anchor in perfect safety. But this capacious haven, which might shelter half the fleets of Europe, has hardly even a considerable village on its shores, and is seldom visited by ships. From Lough Swilly round to the bay of Donegal, the coast is deeply indented with bays, and is in several places fenced with islands. Killybegs Bay, on the south-west shore of Donegal, has a narrow entrance; but it is free from danger, even for ships of any burden, which, when in, lie in safety in from 6 to 8 fathoms water. Donegal Bay is a broad arm of the sea, lying between St. John's Cape on the north-west, and Mullachmore Point, in Sligo, on the south-west. It contains within its expanse several harbours and creeks, of which Donegal and Ballyshannon are the principal, but neither is accessible to large vessels.

Sligo Bay is capacious. The harbour of Sligo lies to the east of Coney Island. A pier has lately been erected outside the bar; and, though rather troublesome of access, the port is now a very tolerable one, and its trade and shipping are both rapidly increasing. The value of the exports, in 1835, amounted to 369,490*l*.

From Sligo Bay the coast runs nearly due west as far as Erris Head, the north-western extremity of Mayo; but it has no harbour of consequence with the exception of Killala Bay and Broadhaven; the former shallow and fit only for small craft, and the latter, though deep, confined and open to the north.

At Erris Head the coast takes a southerly direction. Within the narrow peninsula, called the Mullet, is Blacksod Bay, opening to the south, and stretching northwards about ten miles. It has water sufficient to float the largest ships; but the shelter is indifferent.

To the south of Blacksod Bay is Achill Island, separated from the main land by a narrow shallow strait. Clew Bay lies to the south-west of this island. It is a large rhomboidal-shaped sheet of water, the violence of the heavy seas thrown in from the west being broken by Clare Island, lying in its mouth. Its mean depth is about 15 fathoms; and its east end is studded with a vast number of islands. Newport and West-port, both recently founded and increasing towns, are situated, the former on the south-east, and the latter on the north-east corner of the bay.

The coast of Galway is rugged in the extreme, being every where indented with arms of the sea. Roundstone Bay, Birterbuy Bay, Kilkerrin Bay, &c., on the Connamara and Moycullen coast have all, particularly the first, deep water, and excellent accommodation for the largest ships; but they are rarely visited except by fishing boats.

The great arm of the sea called Galway Bay, is bounded on the north and east by Galway, on the south by Clare, and on the west, where it opens to the Atlantic, it is protected by a natural break-water formed by the south isles of Arran, which extend north-west and south-east, about a dozen miles across its mouth. There are 2 entrances to the bay, 1 to the north, and the other to the south, of the islands; the first is somewhat dangerous, from shoals and rocks, but the latter is deep, safe, and open. There are many harbours and inlets within this spacious bay. The town of Galway is situated at its north-western extremity. A light-house has been erected on one of the isles of Arran; and another on Mutton Island, off Galway harbour. Floating docks on a considerable scale, and of the most perfect construction, have recently been formed at the town of Galway, which have added considerably to its importance as a commercial mart.

From Black Head in Galway Bay the coast of Clare trends south-west to Loop Head, at the mouth of the Shannon. It is destitute of any good harbour; and vessels embayed between Hag's Head on the north, and Ballard's Point on the south, or in what is called Malbay, have but little chance of escaping shipwreck.

Principal Headlands and Places on the Coast of Ireland, with the Latitude and Longitude, as given by the best Authorities.

PLACES.	Lat.				Long.			
	°	′	″			′	″	
Kerry Head - - - - -	52	29	0	N.	9	52	0	W.
Dunmore Head - - - - -	52	13	0		10	19	30	
Brea Head (Valentia Island) - -	52	2	0		10	16	30	
Crow Head - - - - -	51	33	0		10	9	0	
Brow Head - - - - -	51	26	0		9	44	0	
Cape Clear - - - - -	51	26	3		9	29	20	
Old Head of Kinsale (Lighthouse) -	51	36	45		8	32	16	
Cork - - - - - -	51	53	54		8	30	0	
Youghall - - - - - -	51	57	0		7	51	0	
Hook Tower (Lighthouse) - -	52	7	25		6	55	58	
Waterford - - - - -	52	16	0		7	7	0	
Carnsore Point - - - - -	52	1	0		6	18	30	
Tuscar Rock - - - - -	52	12	9		6	12	37	
Wicklow Head - - - - -	52	58	22		5	58	0	
Dublin - - - - - -	53	21	30		6	17	0	
Kerny or Cairney Point (Down) - -	54	22	0		5	27	30	
Belfast - - - - - -	54	35	0		5	56	0	
Fair Head - - - - -	55	14	0		6	3	30	
Bengore Head - - - - -	55	16	10		6	23	20	
Malin Head - - - - -	55	22	0		7	23	30	
Bloody Farland Point - - -	55	8	0		8	17	0	
Tillen Head - - - - -	54	38	0		8	43	0	
Sligo - - - - - -	54	22	0		8	22	0	
Erris Head - - - - -	54	19	0		9	57	0	
Achill Head - - - - -	54	0	0		10	11	0	
Slyne Head - - - - -	53	25	0		10	12	0	
Galway - - - - - -	53	16	0		9	0	0	
Loop Head - - - - -	52	34	0		9	56	11	

SECT. V. — *Soil, Bogs, &c.*[1]

Soil. — There is in Ireland a considerable diversity of soil, but not nearly so great as in England. It has little clay soil, meaning by that term such clays as are found in Oxfordshire, and in some parts of Essex, Suffolk, and Surrey; that is, soils of uncommon strength, stubbornness, tenacity, and retentiveness. Sandy soils are also rare in Ireland; and there are no chalky soils, or such as abound in Surrey, Sussex, Hants, Wilts, &c.

The prevalent soil of Ireland is a species of *loam*, of which there are many varieties. In the county of Tyrone, it is so strong as to make good bricks; but, speaking generally, it is comparatively light, and is in most places rather shallow. The rockiness of the soil is remarked by Mr. Young as the thing which struck him most in the appearance of Ireland. Indeed, by far the largest part of the kingdom rests on a stratum of rock. In some large districts it is every where appearing upon the surface; and where the soil is richest, as in the most fertile parts of Limerick, Tipperary, Meath, Roscommon, &c., rock is uniformly met with at no great depth. Much of this rock is limestone, a circumstance which contributes most materially to increase the productiveness of the soil. In most countries so shallow a soil would be accompanied by great sterility; but in Ireland the moisture of the climate renders it conducive to abundance. "If," says Mr. Young, "as much rain fell upon the clays of England as falls upon the rocks of her sister island, they could not be cultivated. But the rocks here are clothed with verdure; those of limestone, with only a thin covering of mould, have the softest and most beautiful turf imaginable." — (*Tour in Ireland*, part ii. p. 3. 4to. ed.)

The friable and sandy loam, which forms a large proportion of the soil of Limerick, Tipperary, Roscommon, Meath, Longford, &c., is, perhaps, all things considered, equal to any land in Europe. Its fertility is such that it is not materially injured by the miserable system of cultivation practised upon it. If preserved clean, it will yield an almost endless series of corn crops. "It is equally well adapted to grazing and tillage, and, I will venture to say, seldom experiences too wet or too dry a season. The richness of the land, in some of the vales, may be accounted for by the deposits of soil carried thither from the upper grounds by the rains. The subsoil is calcareous, so that the very richest manure is thus spread over the land below, without subjecting the farmer to any labour." — (*Wakefield's Ireland*, vol. i. p. 80.)

The famous pastures, called the *corcasses* or *caucasses*, on the banks of the Shannon and Fergus, are not surpassed by the best in Lincolnshire.

One of the most remarkable divisions of soil is that formed by the Barrow. To the west of that river limestone is met with in abundance, whereas it is nowhere to be found throughout the counties of Wexford and Wicklow. It is the general opinion, that the limestone in the neighbourhood of Carlow is the best in Ireland. In the county of Waterford there is no limestone north of the Blackwater.

In point of natural fertility, Mr. Young is decidedly of opinion that

Ireland is, acre for acre, superior to England; and in this view of the matter he is supported by Mr. Newenham and Mr. Curwen. Mr. Wakefield is, however, of a different opinion. At all events it is certain that, including bogs, the proportion of waste land is much larger in Ireland than in England. And though it were conceded, as we believe it must be, that the cultivated land of Ireland is superior to that of England, it can hardly, we think, be contended that this superiority is such as to make up for the greater extent of waste and barren land in the former.

All that portion of the soil of Ireland which rests on a calcareous and rocky subsoil never deteriorates, but, when let alone, rapidly improves, and clothes itself with the finest herbage. — (*Newenham on the Natural and Political Circumstances of Ireland*, p. 82.) This quality of the soil may, in some measure, account for the mischievous practice, so common in Ireland, of cropping land till it be completely exhausted, and then leaving it to itself to recruit. In most countries, an abuse of this sort would be so very fatal that it could not long exist on any very large scale. But the natural fertility of the Irish soil is such that, however exhausted, the land is sure, if let alone for a very few years, to recover its pristine richness, when it is again subjected to the same abusive treatment.

"The exuberant fertility of the soil of Ireland," says Mr. Curwen, "enables the husbandman to proceed in a manner which, if pursued in England, would long ago have made that garden a desert. A century ago Swift complained of the ruinous custom of over-cropping: in later times it has been carried to an extent far exceeding the practice of his days; and, though still persisted in, there is no deficiency of produce." — (*Letters*, vol. ii. p. 72.)

Bogs. — The greatest drawback on the fertility of Ireland is the vast extent of the bogs with which her surface is, in many places. covered. These bogs consist "of moist vegetable matter, covered more or less with unproductive vegetables, and containing a great deal of stagnant water." Some are, of course, more or less wet than others. They vary also in depth, consistency, &c. The colour of the matter of which they are composed is, for the most part, reddish, whence they are usually called *red bogs*. Exclusive of the red or flat bogs, a very large proportion of the mountains of Ireland are covered with peaty or bog soil; and hence the term *mountain bogs*.

Commissioners were appointed by Parliament in 1809 to inquire into the nature and extent of the several bogs in Ireland, and the practicability of draining and cultivating them. These gentlemen drew up some Reports, illustrated by plans and sections, and containing a great deal of information as to the subjects they were appointed to investigate. In their First Report the Commissioners observe, that if 2 lines were drawn, 1 from Wicklow Head to Galway, and another from Howth Head to Sligo, the intervening space would comprise about $\frac{6}{7}$ths of the flat red bogs in the island, excluding those less than 500 acres. This great belt is divided into two portions by the Shannon; the division to the west of that river containing more than double the extent of bog that is contained in the division to the east. The Commissioners further state, that if the bogs of Ireland, exclusive of mountain bogs and flat bogs of less than 500 acres, be supposed to be divided into 20 parts, about 17 of them will be included within the great belt, or zone, already mentioned; viz. 12 to the westward and 5 to the eastward of the Shannon; and, of the 3 remaining parts, 2 will lie to the south, and 1 to the north, of this belt. Most of the bogs lying to the eastward of the Shannon, and which occupy a considerable portion of King's and Queen's counties, and of the county of Kildare, are generally known by the name of the Bog of Allen. This, however, is not one great morass: on the contrary, the bogs so called are perfectly distinct from each other, being often separated by ridges of dry ground, with their waters flowing to different rivers. In general it may be said, that there is no part of the bogs to the eastward of the Shannon, so much as 2 Irish miles distant from the upland and cultivated districts. — (1*st Report*, p. 4.)

In their Fourth Report (printed 28th April, 1814, p. 16.) the Commissioners state as the result of their inquiries and surveys, that "the extent of peat soil in Ireland exceeds 2,830,000 English acres, of which, at least, 1,576,000 consist of flat red bog; and that the remaining 1,255,000 acres form the covering of mountains."

Cultivation of the Bogs. — Considering the vast extent of the bogs of Ireland, their drainage and cultivation becomes a matter of great national importance. Almost all the engineers employed by the parliamentary Commissioners are of opinion that it may be accomplished at no very heavy expense. The bogs are generally, indeed, at such an elevation above the level of the sea, as to allow of drains being cut to a depth sufficient to permit the escape even of the bottom water. But the Commissioners observe, that "the bogs partake of the nature of a sponge, and are completely saturated with water." Although, therefore, a vent were made for the bottom water, it does not follow that the water held in suspension by the bog would also be carried off. On the contrary, experience shows that, when drains are cut through a bog, though at no considerable distance from each other, the intermediate portion continues nearly as wet as ever. But supposing that this apparently insuperable difficulty were overcome, and that the bogs were completely drained, still we have to inquire whether any advantageous result would follow. According to Mr. Wakefield, the drainage of the bogs would render them "masses of dry inert vegetable matter; and, unless some means were discovered of bringing them into a state of putrefaction, one might as well attempt to cultivate an immense woolpack. The fact is, that, in the present state of bogs, nothing but a covering of earth, clay, marl, or limestone and gravel, will do any good; and this can be applied better without large surface drains (recommended by the Commissioners) than with them. — (*Account of Ireland*, vol. i. p. 105.)

The elaborate estimates given in the reports of the engineers employed by the Commissioners, of the expense of draining and improving bogs, are altogether hypothetical, and are entitled to very little weight. Had a single extensive bog been drained by speculators, and brought into a state of profitable cultivation, there would have been some foundation to go upon. This, however, has not been done;

and, till it be done, there are plainly no data to refer to in relation to this subject on which any reliance can be safely placed. We do not mean to insinuate that we look upon the cultivation of the bogs of Ireland as impracticable. Should the wealth of the country increase, they will, no doubt, be gradually, though, we believe, very slowly, reclaimed. At present, however, we confess it appears to us that there are no good grounds for thinking that their cultivation, if undertaken upon a great scale, would be otherwise than ruinous. Even in Great Britain, most of those who have distinguished themselves by attempts at bog improvement have been heavy losers. Blair Drummond moss, in Perthshire, has not been improved, but exterminated. — (See *Appendix to General Report of Scotland*, vol. ii. p. 42.) And it is abundantly obvious, that, in Ireland, the chances of loss from any public improvement would be incomparably greater.

The bogs of Ireland are of considerable importance, considering the want of timber, and that coal can only be used by the wealthy classes, in furnishing the mass of the people with an inexhaustible supply of cheap fuel. Mr. Bicheno remarks, in reference to this subject, that, "the rainy climate of Ireland, and the wet occupations of the people, with the nature of their food, make a fire more important to them than to most others; and, in fact, is frequently the substitute for clothing, bedding, and, in part, shelter. Had it not been for the bog, the measures taken in former times to extirpate the nation might probably have succeeded; but the bog gave them a degree of comfort upon easy terms, and enabled them to live under severe privations of another kind." — (*Ireland and its Economy*, p. 28.)

In corroboration of this statement we may observe, that in many parts of the north of Ireland, where the bogs were of a comparatively limited extent, they have long been considered as the most valuable part of the soil. Many of the smaller ones have, indeed, been wholly cut out; and the neighbouring inhabitants have, in consequence, been subjected to considerable privations. Mr. Wakefield thinks that, owing to its saving a great deal of labour, English coal would really be cheaper in most parts of Ireland than turf. But in Ireland there is a glut of labour; and we incline to agree with those who contend that little stress can be laid on the time spent in cutting and saving turf, seeing that the chances are that, were the peasantry not employed in this way, they would either not be employed at all, or quite as unprofitably. Mr. Wakefield's remark is applicable to England, but not to Ireland.

SECT. VI. — *Geology.*

The geology of Ireland has hitherto been but imperfectly explored; and part of its surface, containing nearly 3,000,000 of English acres, is covered with turf bogs to the depth of from 5 to 30 feet, which conceal many of its mineral treasures. Sufficient, however, is known, to exhibit the leading features of the physical structure, and mineral geography of the country. The outline of the geology of Ireland differs greatly from that of England. In the latter the alpine primary and transition districts are situated on the western side, and the upper secondary strata occupy the south-eastern and eastern side of the kingdom, extending from Dorsetshire to the east side of the bishopric of Durham. Ireland, on the contrary, is on every side nearly surrounded by groups and ranges of primary and transition mountains, the inland and central counties being comparatively low, and composed of secondary formations, except where branches from the outer alpine ranges run into them. On the north-east side of Ireland, there is a very small extent of the upper secondary strata, similar to what occurs on the eastern side of England, and nearly the whole of the county of Antrim is covered by basaltic rocks.

For the convenience of description, we shall divide the alpine part of Ireland into 5 districts; the southern, the south-eastern, the north-eastern, the northern, and the western.

The southern district comprises the counties of Kerry, Cork, and Waterford, extending along the coast from the mouth of the Shannon to Waterford Harbour; it includes also parts of the neighbouring counties of Clare, Limerick, and Tipperary. The mountains in this district are the highest in the island; they generally run in a direction from east to west, in distinct chains or ridges, of which the beds in the axes of each ridge are vertical. On each side of the axes, the beds dip north and south, diminishing in inclination as they recede from the centre, and form a succession of troughs betweeen the different ridges. Towards the north the beds decline gradually, and finally pass under the old red sandstone and the limestone of the midland counties. In the county of Kerry, Gurrane Tual, one of the mountains called Macgillicuddy's Reeks, near the Lake of Killarney, rises 3,410 feet above the level of the sea. The rocks are principally of the transition class, consisting chiefly of greywacke, slate, limestone, and quartz rock; there are also beds of sandstone and conglomerate. Roofing slate, though comparatively rare, is found of an excellent quality in the island of Valentia. The transition rocks of Kerry and Limerick are prolonged into Cork and Waterford, preserving nearly the same character and composition.

The limestone in this district contains similar organic remains to those found in the transition limestone in other countries, such as orthoceratites, and several species of terebratula, spirifer, and productus.

In Clare, the clay-slate mountains are bordered by old red sandstone, over which occur mountain limestone, and a portion of the coal measures; but, according to Mr. Weaver, the coal is of rare occurrence, and of an indifferent quality. — (*Proceedings of the Geological Society, June*, 1830.) Mr. Weaver describes the coal of the province of Munster, excepting that of the county of Clare, as belonging to the transition series, and not to the regular coal formation above mountain limestone: for this opinion no satisfactory evidence was advanced, and it is now ascertained that the coal formation of this province resembles, both in its geological position and the nature of its vegetable fossil remains, the regular coalfields in England. The beds of dry coal, called anthracite, near Killarney, are found to the north of Tralee, in highly inclined beds of indurated slate and sandstone. This coal is more extensively developed in the county of Cork, and is in considerable quantities, and used for burning lime: the collieries of

Dromagh have yielded 25,000 tons per annum, worth from 10*s.* to 15*s.* per ton. Beds of similar coal occur in the county of Limerick, on the left bank of the Shannon.

In the counties of Kerry and Cork there are several mines of copper and lead. The mine of Allihies, in Cork, discovered in 1812, has, in some years, yielded above 2,000 tons of copper ore. Besides the beds and veins of ore which occur in the rocks in Cork, there is, according to Mr. Weaver, a very general diffusion of cupreous particles in this district. In 1812, there existed a peat bog on the east side of Glendore Harbour, so much impregnated with copper, that 40 or 50 tons of dried peat, when burned, yielded 1 ton of ashes containing from 10 to 15 per cent. of copper. The south-eastern primary and transition district extends along the coast from Waterford Haven to the Bay of Dublin, comprising the counties of Wexford and Wicklow, and part of the county of Dublin. The mountain groups in this district range in a south-west and north-east direction; the loftiest summits rising from 2,000 to near 3,000 feet above the level of the sea. They rarely, indeed, attain the latter elevation; but their varied and picturesque outlines give greater interest to their appearance than many mountainous regions of far higher altitudes afford. The traveller who has seen the beautiful group of mountains that partly surrounds the Bay of Dublin will admit the correctness of this remark. A range of primary rocks, consisting chiefly of granite and mica slate, with some quartz rock, runs through the district from Dublin Bay to the junction of the rivers Barrow and Suir, on the south. This primary range is about 11 miles in breadth, but is narrower near Dublin Bay. Lugnaquilla, the highest mountain in this range, is 3,039 feet above the level of the sea. The height of the conical mountain called the Great Sugar Loaf, composed of quartz rock, is 1,651 feet. The eastern side of the primary range is clay-slate, and there is also a strip of clay-slate on the north-west. The eastern side of the granite range contains numerous metallic veins, but they rarely occur on the western side. Metallic particles are stated by Mr. Weaver to be diffused through the quartz rock. The clay-slate contains metallic beds, and veins of lead-ore and blende, with some copper pyrites; very small quantities of gold, silver, and tin ores are also found in the slate. The most remarkable produce of this district is alluvial native gold; it was found in the bed of a small stream, on the eastern declivity of the mountain called Croghan Kinshela, at the southern extremity of the granite range. The mountain is stated to be composed of hornblende-slate and clay-slate, and is near the junction with granite.

The discovery of native gold in the Ballenvalley stream, at Croghan Kinshela, was accidental, and was at first kept secret; but being divulged, almost the whole population of the immediate neighbourhood flocked in to gather so rich a harvest, actually neglecting, at the time, the produce of their own fields. This happened about the autumn of 1790, when several hundred people might be seen daily assembled, digging and searching for gold in the banks and bed of the stream. Soon after, government determined to commence active operations. Regular stream works were established, and at the period of the rebellion, in 1798, when the works were destroyed, government had been fully reimbursed for its advances, the produce of gold having defrayed the expenses and left a surplus in hand. In 1801, the operations were resumed, and it was proposed to extend the researches for the discovery of auriferous veins, for which the directors conceived they were justified, by the following considerations: — Auriferous veins are often found in mountains adjacent to districts containing alluvial gold. The gold at Croghan Kinshela occurred in lumps, and in smaller pieces and grains. One piece weighed 22 oz., another 18 oz., a third 9 oz., and a fourth 7 oz. The gold was found dispersed through a kind of stratum, composed of clay, sand, gravel, and fragments of rock, and covered by soil which sometimes was of considerable depth. By the operations in the stream works, all the metallic particles were collected in a concentrated mass, consisting of gold, magnetic ironstone, iron sand, iron pyrites, specular iron ore, and brown and red ironstone, with fragments of tinstone, wolfram, manganese, and quartz. Several veins of quartz, in the mountains adjacent were known to contain magnetic ironstone, iron pyrites, copper pyrites, and iron ochre.

Numerous trials were made, by driving and sinking in the veins, and the mineral substances obtained were subjected both to fire and amalgamation, but in no instance was a particle of gold elicited: hence, government was induced to abandon the enterprise. The mining operations equally failed in discovering tinstone, wolfram, or manganese, though all these minerals had been found in the stream bed which contained gold.

The total quantity of native gold, collected by government amounted to 944 ounces, of which about 58 ounces were sold as specimens at 4*l.* per ounce. The aggregate value of the whole was 3,675*l.* 11*s.* Several trials were made in the adjacent mountain streams, and minute particles of gold were found, but not sufficient to repay the cost of the operation.

Of the numerous copper and lead veins known in the county of Wicklow, only four are at present (1838) at work; viz., the lead mines of Lagganure and Glenmalure, on the boundary of the granite, and slate, and the copper mines of Ballymurtagh and Cronebane, in the vale of Ovoca, 6 miles to the west of Arklow.

The north-eastern primary and transition district is separated from the south-eastern by intervening beds of limestone and lower secondary strata, which cover the surface of the country, north of Dublin Bay, to near Dundalk Bay, and are connected with the great limestone and secondary formations, that occupy the inland counties of Ireland. The north-eastern district comprises the counties of Down and Armagh, and part of Lough, extending along the coast from the south of Dundalk Bay to Belfast Lough, and westward to Lough Erne, including parts of the counties of Monaghan and Cavan. The prevailing rocks of this district are greywacke and greywacke slate; but from Dundrum Bay to Callingford Bay there is a lofty group of primary rocks, composing the Mourne mountains, of which granite is the prevailing constituent part. On the skirts of this granitic range are beds of hornblende, and hornblende intermixed with felspar, called by some geologists primitive greenstone. This district is bounded on the north by red marl and sandstone, and by the basaltic beds in the county of Antrim. The highest of the Mourne mountains is nearly 2,800 feet above the level of the sea.

The northern district extends from Lough Foyle, on the north coast, to Donegal Bay, on the west: it comprises the counties of Londonderry and Donegal, and part of Tyrone. The prevailing rocks of this district are mica slate. It has been supposed that the mountains of this part of Ireland, composed of mica slate, with beds of porphyry and limestone, are a continuation of the Grampian range of mountains in Scotland, which extend in a nearly similar north-east direction, from the Mull of Cantire to the German ocean.

The granite and transition rocks of the north-east district have also been regarded as a continuation of the granitic and transition rocks, that range from Port Patrick and the Mull of Galloway, on the south-west of Scotland, to the eastern coast. In Scotland, as in Ireland, the northern primary and transition ranges are separated from the southern and eastern ranges by a tract of country containing strata associated with the coal formation. The highest mountains in the northern primary and transition district of Ireland have an elevation varying from 2,000 to nearly 2,500 feet.

The fifth or western primary and transition district is bounded on the coast by the Atlantic Ocean, from near Dunfiney Bay, on the north-west of the county of Mayo, to Galway Bay: it comprises great part of Mayo, with parts of Sligo and Galway, and may be described as the wildest part of Ireland. A chain of lofty mountains, extends eastward from Achill Island to the Nephin mountains, on the west side of Lough Conn, and thence to the north-west of Mayo. Nearly the whole of the country, east and west of this chain, is covered with bog. There is also a northern range, extending westward from Dunfiney Bay to Broad Haven. A chain, called the Gauff, or Ox mountain, extends along the eastern portion of this district, in a north-east and south west direction. Minor ranges of hills are situated between the mountain ranges. The mountains are composed of Gneiss and mica slate, with hornblende slate and quartz rock, and some granite. In the lower parts, occur greywacke, old red sandstone and limestone. Mr. Griffith regards part of this limestone as a different formation from that of the great central limestone district; it contains large orthoceratites, called by the inhabitants cows' horns. This may be described as the lower transition limestone. On the eastern part of the district, the mountain limestone forms entire mountains of considerable elevation, and contains oolitic beds, which are, however, distinct from the regular oolitic formation, and are of a more ancient epoch.

The cliffs on the northern coast of Mayo are exceedingly precipitous, and overhang the sea in some parts. The highest mountains vary in height, from about 2,000 to 2,680 feet the altitude of Muilrea, the highest in the district. The western coast of Mayo is, in some parts, low, and covered by heaps of sand. The mineral treasures of this district have been almost entirely neglected; but it is known to contain ores of lead and zinc. According to a paper of Archdeacon Verschole, read to the Geological Society of London, there are 11 parallel basaltic or trap dykes intersecting the northern part of this district, in a north-east and south-west direction: they cut through all the rocks from gneiss to mountain limestone. One of these dykes he traced between 60 and 70 miles.

Besides the five alpine districts, which surround the midland counties, there are some small isolated districts, or patches of primary and transition rocks, situated within the midland counties, where the rocks of this class rise through the surrounding secondary formations, at a considerable distance from the coast. Indeed, there can be little doubt that the rocks which compose the primary and transition districts dip down, and extend under the secondary formations that cover the whole inland counties of Ireland.

We now proceed to describe the secondary and basaltic formations of Ireland. No vestiges of the more recent, or what geologists call the tertiary strata, have hitherto been discovered in any part of the country. The secondary formations occupy two districts, which may be called the central; and the northern secondary districts.

The central district comprises nearly all the inland and midland counties of Ireland: it is surrounded by the five alpine districts before enumerated, except between Dublin Harbour and Drogheda, where it is bounded by the Irish Sea; and on the north of the county of Sligo, and the west of Clare, it is bounded by the Atlantic. This central district comprises more than a third part of the surface of the island, expanding north and south from the northern borders of Cork and Waterford to Sligo. This district has sometimes been called the "Great Limestone Valley of Ireland," because limestone is the prevailing substratum, though in many parts the limestone is covered with various detached coalfields, and secondary strata, connected with the coal formation. Mr. Griffith, in his Reports on the Bogs of Ireland, describes the great limestone valley as including only a fourth part of Ireland; but he abstracts from it those parts where the limestone is covered by secondary beds.

We should, however, form an erroneous idea of this extensive district if we supposed that it is strictly speaking a valley. Surrounded on each side by alpine districts, containing lofty mountain ranges, the great limestone valley may be called a low country; but it is diversified with hills and valleys, and in some parts contains alpine mountains, forming patches of primary and transition country, surrounded by lower secondary strata. Like the Weald of Kent, it appears a plain when viewed from the lofty hills which nearly surround it; but, on passing through it, we find this comparatively level country rising into considerable hills, and intersected by valleys varying in breadth and depth. The plains and bottoms of the valleys in the central secondary district of Ireland, appear to have been particularly favourable to the extension of peat bogs. Of the 2,830,000 acres of bog, estimated by the Bog Commissioners to exist in Ireland, six sevenths are situated within the limits of the district we are describing. "Nearly the whole surface of the Great Limestone Valley is covered by a bed of limestone gravel; and all the bogs in this valley are surrounded by steep ridges of hills, formed of this gravel, which prevent the immediate discharge of the water into the nearest river. Thus shallow lakes have been formed, in which the mosses and other aquatic plants vegetated, that have formed the peat bogs." — (*Fourth Report of Commissioners*, p. 181.) The limestone in the central district of Ireland is chiefly, if not entirely, what is called by English geologists mountain limestone. In England this limestone forms lofty mountains, particularly in the north-west and western parts of Yorkshire, Northumberland, and Durham; and is in many parts rich in ores of lead. In Ireland, on the contrary, this limestone occurs in the valleys and plains; and the metallic treasures, which it may be reasonably believed to contain, are in a great measure concealed by the numerous peat bogs formed over it.

The coalfields of Ireland may be described in connection with the great limestone valley of the central district, of which they form a part; though coal occurs in some of the counties beyond the limits of this district. Our knowledge of the different coalfields is at present very imperfect. So lately as the year 1814, according to Mr. Griffith, mining in Ireland was conducted on so rude and unscientific a system, that the ruin of those engaged in the mines was almost inevitable; and it has not been very materially improved in the interval. The coal measures or strata of what is called the Kilkenny coal district, occupy the south-eastern side of the central district, or parts of Carlow, Kilkenny, Tipperary, and Queen's County. This coal district is bounded on the east, west, and south, by the rivers Barrow and Nore. The Leinster coal formation, like the great coal formations in England and Wales, rests upon mountain limestone; it is also surrounded with the same limestone, which rises from under the coal strata, and divides it into three distinct coalfields. The largest and most important of these is 15 miles long, from north to south, and 11 miles broad. The well known property of the Kilkenny coal, viz., that of burning slowly without either flame or smoke, has obtained for it among mineralogists the name of stone or non-flaming coal. It is also called mineral charcoal, from its containing from 94 to 96 per cent. of pure carbon. The district contains 7 workable beds of coal, arranged in regular succession one above another. The collieries, particularly those in the neighbourhood of Castlecomer, in Kilkenny, and of Doonane, in Queen's county, have been worked for upwards of a century, and now annually produce about 120,000 tons of coal and culm. The coal is used for domestic purposes and malting, and the culm for burning lime. (*Report of Railway Commissioners.*)

The Munster coal district is very extensive. The principal collieries are situated on the north bank of the Blackwater, and at present (1838) extensive works are being carried on at Dromagh and Gurtun collieries.

In Roscommon and Leitrim, in the province of Connaught, there are coal formations situated within the great limestone valley, and the coal is continued into the adjacent county of Fermanagh: the coal is bituminous, but little is known respecting its extent beyond a small distance from the outer edges of the beds.

The coal in the province of Ulster, beyond the limits of the central district, is of trifling importance. A small quantity is found in Donegal and Antrim. Near Ballycastle, on the coast of the latter, the works are very ancient; stone hammers and other implements of stone, that had most probably been used in the mines before iron tools were invented, having been found in some old workings. In Tyrone, a coal formation ranges from Dungannon northwards to Coal Island, but hitherto its working has not been profitable. The coal of this province is bituminous.

Fourteen of the seventeen counties in Ireland, in which coal has been found in greater or smaller quantities, have been already mentioned: the remaining counties are Westmeath, where coal occurs near Athlone, at a considerable distance from the Kilkenny coal district, Monaghan and Cavan.

Of the ironstone, which accompanies coal in the regular coal formations in Ireland, we have little correct information; but there can be no doubt that abundance of that valuable mineral will be found whenever the coalfields in the central district are well and extensively worked. This great district, which, as before stated, comprises about a third of the whole surface of the island, may be expected to afford coal in almost all situations where the limestone is covered by strata of sandstone and shale; and promises to furnish an almost exhaustless supply of fuel to future generations.

The mineral treasures of Ireland are, however, for the present concealed in many parts by the bogs, that occupy so large a part of the surface of the country. These not only cover tracts which may contain coal, but also hide from observation the metallic veins, that, in all probability, traverse the mountain limestone; as similar limestone, in various parts of England and Wales, contains numerous rich metallic repositories, particularly veins of lead ore.

The northern secondary district of Ireland, consisting of the upper secondary strata, occupies parts of the counties of Tyrone and Armagh, and branches off, on the southern end of Lough Neagh, into two narrow tracts, inclosing the county of Antrim on its eastern and western sides. This district is chiefly composed of the new red marl and sandstone; it overlays the coal in some parts, and contains, like the same formation in England, salt springs and gypsum. As this district separates the north-eastern alpine district from the northern, it presents, like all other countries at the feet of alpine ranges, beds of conglomerate, formed of the ruins of the adjacent mountains. Part of the other secondary formations which abound on the eastern side of England, as the lias, the greensand, and chalk, occur in the county of Antrim, but are almost every where covered by thick beds of basalt. They are well exposed to observation in the cliffs on the coast, and at the bottom of the valleys that intersect the country. The basalt is said to cover 800 square miles of surface, to the average depth of 545 feet.

Below the basalt, in a descending series, are —

1. Chalk, thickness about 200 feet.
2. Mulatto or Green Sand.
3. Lias, Limestone, and Clay.
4. Red and Variegated Marl.

} The total thickness of these three formations, 800 to 1,000 feet.

The thickness, however, varies in different situations: sometimes the greensand and lias are wanting, and the chalk rests immediately on red marl. The chalk and sand are remarkably constant in most parts: at Ballycastle, however, the basalt rests upon coal measures. Chalk extends also beyond the limits of the basalt, and, according to Mr. Bryce, in some situations may be seen resting in horizontal beds, on highly inclined beds of mica slate, but it is generally covered with basalt. — (*Proceedings of the Geological Society*, No. 27. May, 1832.)

Dykes, or nearly vertical fissures, filled with basalt, intersect the beds of basalt and the rocks on which they repose: similar basaltic dykes also intersect the rocks of granite and mica slate on this side of Ireland.

It has been necessary to notice the basaltic beds on the north of Ireland, in connection with the upper secondary strata with which they are associated; but the remarkable geological phenomena which this district presents demand particular attention. The origin of basaltic rocks was, a few years since, a subject of much controversy among geologists; some maintaining that they were aqueous depositions, and others that they were the products of igneous fusion, like compact lavas. An extensive examination of ancient and recent volcanic districts has since decided the question; and we believe no experienced geologists at present hesitate in ascribing an igneous origin to basalt. It would be foreign to our purpose to enter into an exposition of the facts by which this opinion is supported. It may suffice to mention, that the mineral composition of many basaltic and volcanic rocks are identical with that in the volcanic district of Auvergne: in that district scoriaceous lava may be seen passing by gradations into compact basalt, and, in some situations, into columnar basalt: lastly, basaltic rocks, when in contact with limestone, often convert it into hard crystalline marble, the apparent result of intense or long-continued heat.

The north of Ireland, as before stated, is covered, over an extent of 800 square miles, with various beds of basalt, the average thickness of which is estimated to exceed 500 feet. Some of these beds are elevated to the height of from 1,400 to 1,800 feet. It may be asked where are the volcanoes whence these beds have been poured forth? The answer will not be difficult. The largest beds of lava formed by modern volcanoes have not issued from the crater at the summits, but from vast fissures in the sides, or at the feet of the mountains; and we believe that the first volcanic eruptions have generally been from extensive fissures, which pour out the lava on each side, until the fissure becomes partially closed, and the eruptions are confined to distant apertures, which in time form volcanic cones. Now, in Ireland, we have numerous instances of extensive perpendicular rents, more than 25 feet in width, which are filled with basalt: these may be seen cutting through the rocks on the coast. It is through these rents, in all probability, that the successive beds of basalt have been poured out, like liquid lava. It must also be remembered that the chalk, and secondary strata under the basalt, are filled with marine organic remains, and were originally deposited in a deep ocean: and various reasons might be stated in favour of the opinion, that the basalt of Ireland and many other countries was deposited by submarine eruptions, and under a great pressure of incumbent water, at a period antecedent to the elevation of the present land above the level of the sea.

The beds of basalt in Ireland, as they are displayed in the cliffs on the coast, present several ranges of magnificent columns, at different heights above the sea: the same range, dipping down gradually towards the sea in some parts of its course, and rising from it in other parts. A section near the Giants' Causeway, according to Dr. Richardson, presents the following succession from the surface:—

		Feet.
1.	Rudely Columnar Basalt	60
2.	Red Ochre	2
3.	Irregularly Prismatic Basalt	60
4.	Columnar Basalt	7
5.	Between Bole and Basalt	8
6.	Coarsely Columnar	10
7.	Columnar Basalt: this forms the upper range of pillars at Bengore Head	54
8.	Irregular Columnar, with Wacke and Wood-coal	54
9.	Columnar Basalt: this strata forms the Giants' Causeway, by its intersection with the plane of the sea	44
10.	Bole or Red Ochre	22
11. 12. 13.	Tabular Basalt, with seams of Ochre	80
14. 15. 16.	Tabular Basalt, with Zeolite	80

The promontories of Fair Head, Bengore Head, and the Giants' Causeway, are parts of a vast basaltic range along the north coast of Antrim. Various ranges of columnar basalt, forming natural pillars, rise from the sea to the height of 500 feet, as described in the preceding section; and form a pile of natural architecture, in which the regularity and symmetry of art is united with the wild magnificence of nature. Many of the columns in the ranges at Fair Head are 150 feet in height, and 5 in breadth. At the base, along the shore, is a wild waste of rocky fragments, which have fallen from the cliffs: some of the masses resemble the ruins of enormous castles. At the Giants' Causeway, the columns rarely exceed 1 foot in breadth, and 30 in height: the columns are generally sharply defined pentagons, or hexagons; but some of them have 8, and others not more than 3, sides. The columns are divided into smaller blocks or prisms, of 1 foot or more in length, which fit into each other by a convex and concave surface. At Fair Head the blocks are of great length, and lie flat on each other. The columnar basalt, as may be seen by the section, rests on and is covered by beds that are not columnar. At the Giants' Causeway the tops of ranges of pillars may be seen extending northward under the sea. It is not improbable that this great basaltic formation may have been united with similar formations in Scotland and the Hebrides. The basalt of this district is sometimes granular, and sometimes compact. Near the centre of the basaltic district, 7 miles east of Antrim, the basalt passes into porphyry and porphyritic pitchstone. The essential component parts of all these basaltic rocks is felspar and augite or hornblende, in different states of admixture and crystallisation. The prismatic or columnar form is not uncommon in many other rocks: in some instances it may have been produced by slow refrigeration; it is also sometimes the result of crystallisation in aqueous depositions. One of the gypsum beds in the quarries at Montmartre, near Paris, is columnar. The chalk beds of Antrim are in some situations broken, and portions of chalk are enveloped in the basalt: this must have been effected when the latter was in a state of fusion: the chalk, in proximity with the basalt, rendered it hard and crystalline.

The bogs of Ireland present to the geologist few objects deserving particular attention, except their vast extent, and the organic remains which they contain. Though peat be now constantly accumulating, there can be no doubt that many peat bogs are of considerable antiquity, as the remains of an enormous distinct species of elk occur abundantly in them, and in the beds of shell marl under peat. Heads and horns of this animal, called the Irish fossil elk (*Cervus megaceros*), are most frequently found; but other bones, and even an entire skeleton, was discovered in 1825, and is preserved in the museum of the Royal Dublin Society. The length of each horn is 5 feet 9 inches; the distance of the extreme tips of each horn, 11 feet 10 inches; length of the spine, 10 feet 10 inches; height of the upper extremity of the dorsal spines, 6 feet 6 inches; height of the tip of the horn above the foot, 10 feet 4 inches. Though the species has been long extinct, there is much probability that these animals lived in the country after it was inhabited by man. The bones are harder and heavier than recent bone, but are in other respects similar: the cartilage and gelatine had not been perceptibly altered; and even fat, or adipocire, has been found in the shaft of one of the bones. Professor Jameson states that in one of the ribs of this animal, in the Dublin museum, he discovered an oval perforation, with a callus around it, evidently caused by an arrow or some sharp-pointed instrument, which had remained fixed in the wound for some time without causing the animal's death. Numerous trunks of trees, with the wood considerably hardened, are found prostrate in the Irish bogs; as is frequently also the case in some bogs in England.

Lough Neagh. — Referring to what has been previously stated as to this lake, it may now suffice to observe, that in almost all alpine countries, where the beds of rock are thrown up at high angles of elevation, indicating an upheaving force, acting along certain lines of the earth's surface, — in such countries, portions of the beds undergo a corresponding subsidence or depression, sinking into deep hollows, in which the waters from the mountains are collected and form lakes. In this manner the lakes, and many of the deeply indented bays on the coast, have been formed; the latter differing from the former in being directly open to the sea at one extremity. Lough Neagh, however, deserves some notice, from the property which its waters have long been stated to possess, of converting wood into a siliceous petrifaction, or, in other words, of impregnating wood with siliceous earth. Most of the rivers of Antrim, Armagh, and Down, run into Lough Neagh, and some of the rivers are said to possess the petrifying property in a greater degree than the lough itself. Siliceous earth is extremely rare in any water, except in some thermal springs in volcanic districts; but, as Lough Neagh adjoins a basaltic country, the presence of silex in its waters would be analogous to what is observed elsewhere. Mr. Tennant could not detect silex in the waters of Lough Neagh; but the fact of silicified trunks of trees being found in this lake is undoubted. In some instances the fissures only of the wood are lined with quartz crystals; in other instances the wood is entirely penetrated with siliceous matter; sometimes one end of the tree will be petrified, and the other end ligneous. This fact alone would appear to prove that the petrifying process is now going on, or has been so recently; for if we refer it to a remote geological epoch, it will be difficult, if not impossible, to explain how any part of the wood, that is not silicified, could have been exposed so long to the action of air or water without decomposition. The trees are also such as are now common in the country, — the oak, the holly, and the hazel. On inquiry, we found that, in the opinion of intelligent persons, inhabiting the borders of the lake, its petrifying properties are still in manifest action on recently submerged wood; and we are inclined to believe that this opinion has been rejected by naturalists without sufficient examination. We are not informed respecting the temperature of the waters of Lough Neagh, or of any of the Irish lakes; but we believe that no thermal springs have yet been discovered either in Ireland or Scotland, — a circumstance the more remarkable, as both countries contain extensive basaltic districts, and it is in the vicinity of basaltic or volcanic rocks that thermal waters are most frequently met with.

Before concluding this brief survey of the geology of Ireland, it may not be irrelevant to state, that the manufactories in the north are mostly supplied with coal from England, at about 12*s.* per ton, delivered at Belfast. We believe too that the greatest quantity of coal consumed in other parts of that country, is also obtained from England and Wales. The great mass of the Irish population will, probably be, for many ages, dependent on the neighbouring peat bogs for fuel. It has been imagined by persons unacquainted with the subject, that the drainage and cultivation of the bogs would deprive the inhabitants of an article so essential to their subsistence; but the Commissioners appointed to survey the bogs state, that their drainage would increase the supply of fuel several hundred times. This does not appear obvious at first; but when it is considered that a bog is generally a spongy or pulpy mass of decomposed vegetable matter, and can only be worked round the edges, where it is nearly dry, we perceive that drainage would render the whole extent of the peat bogs available for fuel, and would thus afford an almost exhaustless supply of that article.

SECT. VII. — *Climate.*

The peculiarities in the climate of Ireland depend principally on its geographical situation; its exposure on all sides, except the east, to the Atlantic Ocean; and the nature of its soil and substrata. To these are to be ascribed its prevailing winds, its comparatively high mean temperature, and its humidity.

a. The Winds, in Ireland, blow still more frequently from the west than in England. Round *Dublin*, the climate of which approaches most nearly to that of England, it was observed, during a period of forty years, that, in *spring*, the east, north-east, and south-east winds were to the west, south-west, and north-west winds as 3 is to 4; in *summer*, the former were to the latter as $2\frac{7}{10}$ is to $5\frac{2}{10}$; in *autumn*, as $1\frac{8}{10}$ to $4\frac{8}{10}$; in *winter*, as $2\frac{3}{10}$ to 4.

At *Londonderry*, the winds from 1795 to 1801 inclusive, were as follows: — From the north, 225 days; north-east, 225; east, 209; south-east, 376; south, 297; south-west, 476; west, 766; and from the north-west, 539.

At *Cork*, Dr. Smith states, that "it appears from a regular diary of the weather kept for several years in that city, that the winds blow from the south to the north-west, three fourths of the year at least." The range of the *barometer* at Dublin, has been calculated by Dr. Rutty and others, at from $2\frac{2}{10}$ to $2\frac{4}{10}$ inches. At Londonderry, it has been observed about $2\frac{4}{10}$; at Belfast, $2\frac{5}{10}$; at Limerick, 2 inches; and at Cork, $1\frac{9}{10}$. Storms are most prevalent in Ireland during autumn and summer. South-west winds prevail in the winter months; west winds, in summer and autumn; and the east, north-east, south-east, and north, in spring.

b. The mean Annual Temperature of Ireland is necessarily influenced by the circumstances already referred to as modifying the currents of air passing over it. The position of the island, in the Atlantic and near to Continental Europe, subjects it to westerly winds nearly three fourths of the year, and to a much higher mean temperature than its distance from the equator would otherwise confer upon it; but this is owing more to the mildness of winter and spring, than to the heat of summer and autumn. Frost and snow are not frequent, and seldom continue long in the south and south-west districts of the country. In these, however, the falls of rain are frequent and heavy during autumn and winter. The winter, also, continues much longer than in England; and spring, summer, and autumn, are later in their approach. Owing to the humidity and mildness of the air, and abundant falls of rain in autumn, the country remains verdant, and the trees in leaf, until very late in the year. The temperature, however, is, somewhat influenced by elevation above the level of the sea, by distance from the Western Ocean, by the number of inland lakes, and by the nature of the soil and substrata. The coast is much more mild and humid than the interior; and the southern and western, than the northern and eastern parts.

In his observations on the climate of Cork, Mr. Townsend observes, — "This county is remarkable for the mildness of its temperature, never experiencing those extremes of heat and cold to which the same degree of latitude is subject, not only on the Continent, but even in England. The difference is occasioned by our nearer approximation to the Atlantic Ocean, which loads this part of the island with vapours; seldom, indeed, to be complained of in winter, but too often interrupting the maturer rays of the summer sun. Cork, however, suffers much less in this respect than Kerry and other counties on the western coast, whose loftier mountains involve them still more in cloud and vapour. In such countries as abound more in pasture than tillage, this humidity of atmosphere affords, perhaps, no cause of complaint." — (*Survey of Cork*, vol. i. p. 2.)

The mean temperature of the north of Ireland is about 48°, of the middle, 50°, and of the south, nearly 52° of Fahrenheit. According to Mr. Hamilton, the mean temperature of the north coast, about the latitude of 55°, is 48°; that of the west coast, in lat. 54° 48′, is 48° 6′; that of the eastern coast, near Dublin, in lat. 53° 20′, is 49° 4′; and that of the south coast, near Cork, lat. 51° 54′, is 51° 2′. Dr. Rutty states, that the medium atmospheric heat, in Dublin, of the five years terminating with 1800, was 50° 15′; but elevation above the level of the sea, and distance from the coast, the former especially, cause a relative diminution of the mean atmospheric temperature. Dr. Bryan Robinson gives the following estimate of the comparative heat of the seasons in *London* and *Dublin*: —

Winter — London,	1·00	Dublin, 1·45	Autumn — London,	3·00	Dublin, 3·80
Spring - -	3·00	- - 2·14		——	——
Summer - -	5·00	- - 4·68		12·00	12·07

The following results have been assigned to thermometric observations, made in the following towns: —

	Highest.	Lowest.		Highest.	Lowest.
Londonderry -	81°	21°	Limerick -	75°	28°
Belfast - -	78°·80	25°	Dublin -	81°·50	14°·50
Kilkenny -	79°	29°			

c. *The Quantity of Rain* that falls in Ireland is very various in different places, and even in the same place in different years. The geographical circumstances, however, of the country, and the prevailing winds from the Atlantic, occasion great falls of rain, especially in the western and southern districts. At *Londonderry*, the rain-gauge has varied, in different years, from 26 inches to 35. At *Cork*, the annual fall has ranged from 30 to 54½ inches. At *Dublin* it has varied from about 20 to 31 inches; and at *Belfast*, from 20 to 35 inches. At Dublin the months may be arranged as follows, according to their dryness; — June, February, April, March, May, October, January, September, August, November, July, December. At Belfast, the order of the months, according to their dryness, is as follows: — June, March, April, February, May, November, October, August, December, January, September, July. But the falls of rain on the west and south coasts are certainly seldom below the highest amount just stated. The number, also, of cloudy, foggy, showery, and rainy days throughout Ireland is much greater relatively to the actual fall of rain than in England: the hygrometer, too, generally ranges very high, and often continues to indicate great humidity for long periods. The observations, however, that are requisite to an exact knowledge of the climate of Ireland are remarkably defective, more especially in respect to the western, northern, and southern districts, where the first impression of the Atlantic atmosphere, and, indeed, of the Atlantic Ocean, is especially made.

"The worst circumstance of the climate of Ireland," says Arthur Young, "is the constant moisture without rain. Wet a piece of leather, and lay it in a room where there is neither sun nor fire, and it will not, in summer even, be dry in a month. I have known gentlemen in Ireland deny their climate being moister than England; but if they have eyes, let them open them, and see the verdure that clothes their rocks, and compare it with ours in England, where rocky soils are of russet brown, however sweet the food for sheep. Does not their island lie more exposed to the great Atlantic? and does not the west wind blow three fourths of the year? If there were another island still more to the westward, would not the climate of Ireland be improved?"—(*Tour in Ireland*, 4to ed., part ii. p. 4.)

This humidity of the climate renders Ireland decidedly better fitted for a grazing than for an agricultural country; and would, no doubt, prevent, even though the cultivation were equal, the wheat, barley, and, perhaps, also the oats raised in it, from being so heavy or good as those raised in England. It may be worth remarking, that this peculiarity in the climate was noticed by Pomponius Mela:—"*Cœli*," says he, "*ad maturanda semina iniqui; verum adeo luxuriosa herbis, non lætis modo sed etiam dulcibus, ut*, &c.—(*De Situ Orbis*, lib. 3. cap. 6.)

Hence, in Ireland, still more than in Scotland, droughts rarely prove injurious. "It is a common saying in Ireland, that the very driest summers never hurt the land: for, although the corn and grass upon the high and dry grounds may get harm, nevertheless the country in general gets more good than hurt by it; and when any dearths fall out to be in Ireland, they are not caused through immoderate heat and drought, as in most other countries, but through too much wet and excessive rain."—(*Boate's Nat. Hist. of Ireland*, p. 168., ed. 1652.)

The Soil and Substrata have considerable influence upon the climate. The cultivated soil consists of a light and fertile loam, resting chiefly upon a limestone basis; the uncultivated soil principally of bogs and peat moors, the extent of which has been calculated, by the commissioners appointed to inquire into their nature and extent, at nearly 3,000,000 of English acres. The bogs principally occupy a zone extending across the centre of the island, from the east to the west coast; but which becomes wider as it advances westward. They are situated at various elevations, ranging between 30 and 340 feet above the level of the sea. The prevailing shallow, loamy, and dry soils, resting upon a rocky and chiefly limestone substratum, are well adapted to the nature of the climate. They hinder the humidity of the atmosphere, and the heavy falls of rain, from being half so injurious as they would be, were the soil deep, clayey, and retentive of moisture. The bogs, however, notwithstanding the moderate temperature of the climate, and the antiseptic nature of many of the plants of which they consist, have a more or less injurious tendency, both by lowering the temperature and diminishing the purity of the air.

The prevalence of westerly and south-west winds, the consequent humidity of the air, the remarkably broken and indented state of the western and northern coasts, the number of loughs, or lakes, and considerable rivers, and the tempering influence of the Atlantic Ocean, combine to render the winters mild in respect of temperature, but stormy and rainy; to prevent the continuance of frost; to promote vegetation; to give the face of the country a verdant appearance; to increase fertility; and to produce a greater irregularity and uncertainty of the seasons and weather than in England.

With respect to the influence of the climate of Ireland upon the vegetable and animal kingdoms, little need be said, inasmuch as the existing state of both is manifestly owing more to circumstances foreign to the climate, than to the climate itself. All the productions of the soil usually cultivated in England may be raised in Ireland, although the greater irregularity of the seasons in the latter renders the produce more uncertain; while the greater humidity of the air is, as already stated, unfavourable to the ripening of corn, particularly of wheat. Much, indeed, of the corn of Ireland could not be preserved, unless it were kiln-dried. The remarkable deficiency of forest trees is, however, owing infinitely more to circumstances connected with the political state of the country, than to differences of climate: several forests, which existed when Boate wrote his account of Ireland, have since disappeared; not in consequence of any deterioration of the climate, but of the wasteful, abusive treatment to which they have been subjected. — (See *post.*) The mildness and moisture of the climate is such, that the pasture lands, particularly those resting on a limestone bottom, are always more or less verdant. Even the mountains of Kerry, Cork, and Tipperary, are usually grazed throughout the year. In the southern counties the cattle are seldom, and in some places never, housed during winter. The eulogy of Giraldus Cambrensis, on the climate of Ireland, is more applicable at the present time than when he wrote: — "*Terra terrarum temperatissima, nec Cancri calor exæstuans compellit ad umbras, nec ad focos Capricorni rigor invitat, aëris amœnitate temperieque tempora ferè cuncta tepescunt.*" — (*Topog. Hib.* cap. 25.)

The climate, as respects the human constitution, is, upon the whole, highly salubrious. With the slight exception already made, it can hardly be said to be materially less so than the climates of Scotland and England. The greater prevalence of fevers and dysentery in Ireland, although partly attributable to the humidity of the atmosphere, in connection with marsh exhalations, is mainly owing to other causes; more especially to very poor, and often unwholesome, diet, to famine, to imperfect clothing, to sleeping on the earthen floors of the cabins, to neglect of personal and domestic cleanliness, and to various circumstances which associate themselves with the oppression, ignorance, and bigotry to which the lowest classes are subjected, and with the imperfect civilisation to which they have as yet, in many places, attained.

The very remarkable differences in moral constitution, in temperament, and even in physical conformation, among the natives of the three kingdoms, and more especially between those of Ireland and Great Britain, cannot be explained by any appreciable differences of the climate or soil; they must, therefore, be referred, and are clearly, indeed, attributable, to other sources.

SECT. VIII. — *Civil Divisions.*

Previously to the invasion of Ireland by the English in the reign of Henry II., it was divided, for ecclesiastical purposes, into the provinces of Leinster, Ulster, North and South Munster, and Connaught. But for a lengthened period after the invasion its principal divisions were *the country within and the country without the pale;*

that is, within and without the district on the east and south coasts, principally occupied and settled by the English. The limits of the pale varied at different periods. In 1211 it was divided into 12 counties; viz. Dublin, Meath, Uriell (now called Louth), Kildare, Catherlough, or Carlow, Kilkenny, and Wexford, comprising most part of the province of Leinster, with Waterford, Cork, Kerry, and Tipperary, in Munster. In the reign of Queen Mary, King's County and Queen's County were formed. And by statute of the 11th of Queen Elizabeth, Connaught and Ulster were divided into counties, as we now find them. Wicklow, which had previously been considered as belonging to the counties of Dublin and Carlow, was formed into a separate county early in the reign of James I. Since that epoch, Ulster has contained 9, Leinster 12, Connaught 5, and Munster 6, counties; making for the whole country a total of 32.

Baronies. — These correspond pretty closely with hundreds in England. They appear to have been formed successively in consequence of the submission of the chiefs who ruled over them; the territory of each constituting a barony. This accounts for their extreme inequality in respect of size, and for the territory belonging to one being frequently intermixed with that of another; as is particularly observable in the county of Cork. There are in all 252 baronies in Ireland, of which 54 are in Ulster, 97 in Leinster, 42 in Connaught, and 59 in Munster.

Parishes. — The division into parishes is of much greater antiquity than that into baronies. Originally it was purely ecclesiastical, and was introduced among the civil divisions merely from motives of convenience. Unluckily, however, the civil and ecclesiastical divisions do not always correspond, parishes frequently extending not only into different baronies, but into different counties; and townlands are sometimes attached to one parish for the assessment of the county taxes, while, with respect to tithes and other ecclesiastical contributions, they are considered as forming part of another. This sort of confusion produced considerable inconvenience in the taking of the census. Dr. Beaufort differs from Mr. Griffith with respect to the number of parishes in Ireland; the former stating that they amount to 2,436, and the latter to 2,450.

Townlands. — This is the smallest subdivision of the country. The name, however, is not universal throughout Ireland; some counties having adopted in its stead the term Ploughland, which is supposed to contain 120 acres; but as the quantity has been taken by estimate, and not by measurement, their extent varies considerably even in the same county. Townlands, in many instances, have been subdivided. —(For further remarks on the subdivisions of Ireland, see the *Preliminary Remarks* prefixed to the *Census* of 1821.)

Sect. IX.—*Statistical Notices of the different Irish Counties.*

LEINSTER.

1. *Wexford*, a maritime county, being the most southerly of Leinster, is bounded on the south and east by St. George's Channel; on the north by Wicklow; and on the west by Carlow, Kilkenny, and

Waterford Harbour. It contains 564,479 acres, of which 18,500 are unimproved mountain and bog. Surface pleasantly diversified; climate mild. Soils either light or stiff clays. Property in pretty considerable estates: farms of various sizes, but there is less extreme subdivision of land in this than in most other Irish counties. Dairies numerous, but badly managed: some districts have been long noted for their great crops of barley. Average rent of land 14*s.* per statute acre *; but, in general, it is too high, and the competition for small patches is carried beyond all reasonable limits. The barony of Forth occupying the south-western angle of Wexford, differs widely from the rest of the county, and, indeed, from every other district of Ireland. It was settled, at a distant period, by a colony from South Wales, and, till very recently, the Welsh language was spoken by every one, and is still understood by the older inhabitants. The people are industrious, provident, peaceable, and cleanly. The farms are small, running from 10 up to 50 or 60 acres, but those from 30 to 40 are most common. Mr. Inglis says, that the land is clean and well cultivated; that the crops of wheat and beans, both of which are extensively grown, are excellent; and that the improved Scotch plough with 2 horses is in universal use. The farm-houses are substantial, and the cottages clean and comfortable, forming, in this respect, a striking contrast with those in most other parts of the county. Persons of different religious creeds live in this barony harmoniously together. Land here, as in the rest of the county, very high-rented. — (*Ireland, in* 1834, vol. i. p. 49.) Wexford has no minerals of any importance. The woollen manufacture has been established in the town. Principal rivers, Slaney and Barrow. Wexford contains 8 baronies and 142 parishes; and returns 4 members to parliament; being 2 for the county, and 1 each for the boroughs of Wexford and New Ross. Principal towns and population in 1831:— Wexford, 10,673; New Ross, 5,011; Enniscorthy, 5,955; Gorey, 3,044. Population of county in 1831, 182,713.

2. *Kilkenny*, an inland county, is bounded on the east by Wexford and Carlow; on the north by Queen's County; on the west by Tipperary and Waterford; and on the south by the latter. It contains 513,686 acres, of which 96,569 are unimproved mountain and bog. Surface diversified. Soil of various qualities; in a few places it is moorish; but for the most part it is light and dry, resting on a limestone bottom, some valleys being extremely fertile. Climate mild. Tillage in a backward state; but it has been materially improved during the last 20 years, both as respects the rotation of crops, the implements employed, the stock kept by the farmer, &c. According to the *Survey of Kilkenny* by Mr. Tighe, published in 1802 (p. 253.), of 66,361 Irish acres in cultivation, 26,000 were in wheat, 20,600 in potatoes, 10,000 in oats, and 8,000 in barley. In the interval, however, tillage has been much extended, and the proportion of wheat materially increased. Dairy husbandry extensively practised; but the details ill understood. Property in large estates. Farms of various

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* Unless where the contrary is expressed, all our references are made to the statute or Imperial acre.

sizes, but generally small. Partnership tenures not uncommon (see *Galway*). Farm-houses and other accommodations, for the most part very inferior. Average rent of land, 17*s.* an acre, being among the highest rented counties in Ireland. Mr. Inglis says, that all classes were unanimously of opinion, that the condition of the labourers and small farmers had visibly deteriorated during the last 12 or 15 years. And, whether this be really so or not, the details which he gives show that at present it is exceedingly bad. Manufactures of carpets and some other woollen articles have been attempted at Kilkenny on a pretty large scale; but the experiment has not proved successful.—(*Ireland in* 1834, vol. i. p. 91.) Coal mines have been long wrought at Castle-comer, in the northern part of the county; but, owing to the bad quality of the coal and expense of working, it is not much used. Sandstone, manganese, with iron and lead ores, have been found in various places. Principal rivers, Suir, Nore, and Barrow, which last divides it from Carlow and Wexford. Kilkenny contains 9 baronies, and 127 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Kilkenny. The principal town, Kilkenny, had, in 1831, a population of 23,741. Population of county in ditto, 169,949.

3. *Carlow*, or *Catherlough*, a small inland county, bounded on the south and east by Wexford and Wicklow; on the north by the latter and Kildare; and on the west by Queen's County and Kilkenny. It contains 219,863 acres, of which 23,030 are unimproved mountain and bog. The southern boundary is mountainous; but the rest of the surface is for the most part gently undulating. The soil in the uplands is a light gravel, and in the lowlands a fertile loam. Estates middle-sized. Mr. Wakefield observes of this county, that "It has very little of that minute division of land so injurious to other parts of Ireland. It has neither a temporal nor a spiritual peer resident within it; and, though destitute of manufactures, it is tenanted by more wealthy people than almost any other county in the island. There are extensive dairies in this county, and its butter, of which large quantities are exported to England, &c., is the best of any in Ireland. The inhabitants are said to prefer it when rancid."—(Vol. i. p. 248.) Average rent of land, 15*s.* per acre. Principal rivers, Barrow and Slaney; the former partly intersects the county, and partly divides it from Queen's County and Kilkenny. Carlow is divided into 5 baronies, and 50 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Carlow. The principal town, Carlow, had, in 1831, a population of 9,114. Population of county in ditto, 81,988.

4. *Wicklow*, a maritime county, is bounded on the east by St. George's Channel; on the north by the county of Dublin; on the west by Kildare and Carlow; and on the south by Wexford. It contains 494,704 acres, of which 94,000 are unimproved mountain and bog. This is a very mountainous county. In some places it is well wooded and extremely picturesque and beautiful. Estates mostly large; the most extensive, valuable, and best cultivated belongs to Earl Fitzwilliam. Farms of various sizes; many small. Average rent of land 12*s.* an acre. Speaking generally, rents are much too high; the

labouring population not half employed; and their condition, and that of the small farmers, as bad as possible. But little wheat is raised, and that principally in the eastern parts of the county. Wicklow has to boast considerable mineral treasures. We have already noticed the fact of a quantity of gold having been found in stream-works in this county (*antè*, p. 356.) These, however, have been wholly abandoned, the produce of metal being insufficient to repay the expenses. About 400 persons are at present employed in copper mines at Cronebane and Ballymurtagh; and, in 1834, 8,434 tons of copper and lead ore were exported. Bismuth, manganese, zinc, &c., have also been found, but in inconsiderable quantities. Marl is very abundant in parts of the county, and is said to have wonderfully increased the fertility of some districts. — (*Quarterly Journal of Agriculture*, vol. vi. p. 163, &c.) Principal rivers, Slaney, Fustra, and Ovoca. Wicklow contains 6 baronies, and 58 parishes; and returns 2 members to parliament, both for the county. The county town, Wicklow, had, in 1831, a population of 2,472; and Arklow, of 4,383. Population of county in ditto, 121,557.

5. *Dublin*, the metropolitan county of Ireland, is bounded on the east by St. George's Channel; on the south by Wicklow; and on the north and west by Meath and Kildare. It contains 248,631 acres, of which the unoccupied hill and bog only amount to 10,812. Soil, for the most part, shallow and naturally poor; substratum generally a cold retentive clay. Property much divided. Farms near the city very small; but, at a distance, larger. Agriculture backward, and farm buildings insufficient. Average rent of the county, exclusive of that part called the county of the city of Dublin, and of country houses, 18*s.* an acre, being as high an average rent as is paid by any county in Ireland. Principal river, the Liffey, on which there is a considerable salmon fishery. Neither minerals nor manufactures important.

Dublin, the *Eblana* of Ptolemy, and the metropolis of Ireland, is situated near the bay of the same name, contiguous to the mouth of the Liffey. It labours under the disadvantage of having a shallow bad harbour; but this inconvenience is now to a considerable extent obviated by the artificial harbour formed at Kingstown, and united to Dublin by a railroad. — (See *antè*, p. 344.) Dublin is a large, and, speaking generally, a well-built city. Some of its streets and squares are magnificent; and it has to boast of some of the finest public buildings in Europe; not a few of which have, indeed, been constructed on a ridiculously extravagant scale. There are, however, some very inferior quarters; and a considerable part of the population is in extremely depressed circumstances. Dublin is the seat of the only Irish university. It was supposed by many that Dublin would be seriously injured by the Union, and the consequent removal of the Irish parliament; but this anticipation does not seem to have been well founded. The first estimate of the population on which any reliance can be placed, was framed by the Rev. Mr. Whitelaw, in 1798; who found, by a careful enumeration, that it contained 16,461 houses, and 172,091 inhabitants: but this being the epoch of the rebellion, it seems reasonable to suppose that the population would, under such circumstances, be rather below its usual amount in more peaceable times. The limits of Dublin, within what is called the "first boundary line," as given in the population returns for 1821 and 1831, rather exceed those assigned to it by Mr. Whitelaw, but the difference is not material; and it appears from these returns, that, within the limits in question, it had, in 1821, a population of 224,317, and in 1831, of 232,362. The entire population of the city, with its various suburbs, at the last-mentioned epoch, was 265,316. Population of county at ditto, 380,167.

6. *Kildare*, an inland county, is bounded on the south by Carlow; on the east by Wicklow and Dublin; on the north by Meath; and on the west by King's County and Queen's County. It contains 392,435 acres, of which 66,447 are unimproved bog and waste. Surface varied by some small hills and gentle declivities; but for the most part it is flat, and nearly level. Soil generally clayey, and very fertile. The curragh of Kildare, extending to about 5,000 English acres, has been long celebrated. "Nothing," says Arthur Young, "can exceed the extreme softness of the turf, which is of a verdure that charms the eye, and is highly set off by the gentle inequality of surface. The soil is a fine dry loam, on a sandy bottom."—(*Tour in Ireland*, vol. ii. p. 214.) There are some very large estates; but property is, notwithstanding, a good deal divided. Farms vary in size from 5 up to 200, and even 500, acres: they are, in fact, less subdivided in this than in most Irish counties; a result which has been ascribed to there having been no contested election in it for the 60 years previously to 1830; and to the landlords having, in consequence, no temptation to split their estates for the sake of multiplying freeholders.—(*Min. of Evid. Agricultural Committee of* 1833, p. 495.) Mr. Wakefield describes the husbandry of Kildare as being as wretched as can possibly be conceived.—(Vol. i. p. 419.) But it has been materially amended, as is generally indeed the case, throughout Leinster, within the last 15 or 20 years; and many of the practices and implements which he justly reprobated, have since been partially superseded The old plough of the country is now not often met with. Potatoes are frequently drilled; corn crops do not follow each other in so interminable a succession; and a good deal more wheat is raised; and that, too, of better quality. Average rent of land, 13*s*. an acre. The bog of this county consists principally of part of the peat bog of Allen. Principal rivers, Barrow, Liffey, and Boyne. It contains 10 baronies, and 113 parishes; and returns 2 members to parliament, both for the county. Principal towns and population in 1831:—Naas, 3,808; Athy, 4,494; and Kildare, 1,753. Population of county, in 1831, 108,424.

7. *Queen's County*, an inland county, is bounded on the south by Kilkenny; on the east by Carlow, Kildare, and a detached portion of King's County; on the north by King's County; and on the west by the latter, and Tipperary. It contains 396,810 acres, of which 60,972 consist of unimproved bog and waste lands. Surface generally flat; and soil, except where bog occurs, for the most part very fertile. Estates mostly large; but many of them let on perpetual leases. The head lessees on these estates form the middle class of gentry. They

have mostly let their farms, generally in smaller divisions, to inferior tenants; and these again have subdivided them to others; so that many of the occupancies are extremely small, and are held by persons so very poor as to be incapable of executing any improvement. In cases, however, where the farms have been let by the landlords on terminable leases, they are larger; and a comparatively improved system of agriculture has been introduced. A good deal of cheese is made for the Dublin market. Average rent of land, 14*s.* an acre. Coal and limestone are found in this county.; but the former is not wrought. Principal rivers, Barrow and Nore. It contains 8 baronies, and 50 parishes; and returns 3 members to parliament; viz., 2 for the county, and 1 for the borough of Portarlington. Principal towns and population in 1831:—Maryborough (the county town) 3,223; Portarlington 3,091. Population of county, in ditto, 145,851.

8. *King's County*, an inland county, is bounded on the south by Tipperary and Queen's County; on the east by Kildare; on the north by Westmeath; and on the west by Roscommon, Galway, and Tipperary. It contains 528,166 acres. The bog of Allen occupies a considerable tract in the north-east division of the county, and the Sliebh-bloom mountains in the south: on the whole, it is calculated that the bog and mountain extend over 133,349 acres. The soil is, in some places, very rich, but in others it is light and gravelly: at an average, it may be reckoned of a medium degree of fertility. Estates mostly very large. Tillage farms small, but some grazing ones extensive. Partnership leases, and subtenancy less common than in some other parts of Ireland; but still the condition of the tillage farmers is not much superior, and their accommodations are, for the most part, as wretched as possible. Average rent of land, 12*s.* an acre. Silver has been found at Edenderry, in this county. Limestone is met with every where. Principal rivers, Shannon, Great and Little Brosna. It contains 11 baronies, and 52 parishes; and returns 2 members to parliament, both for the county. The principal town, Birr, or Parsonstown, had, in 1831, 6,594 inhabitants. Population of county, in 1831, 144,229.

9. *Westmeath*, an inland county, is bounded on the south by King's County; on the east by Meath; on the north by the latter and Cavan; and on the west by Longford and Roscommon. It contains 386,251 acres, of which 55,982 are unimproved bog and waste, and 16,334 lakes. Surface agreeably diversified with woods, lakes, streams, hills, and bogs. The substratum being limestone, the verdure of the fields is remarkably fine. Property in moderate-sized estates. Leases commonly granted for 21 years, and a life. Grazing-grounds extensive. Tillage farms much subdivided. Average rent of land, 13*s.* 7*d.* an acre. Principal rivers, Shannon, Inny, and Brosna. It contains 12 baronies, and 62 parishes; and returns 3 members to parliament; viz., 2 for the county, and 1 for the borough of Athlone. Mullingar, the county town, had, in 1831, a population of 4,295; and Athlone, of 11,406. Population of county, in ditto, 136,872.

10. *Longford*, an inland county, is bounded on the south by Westmeath; on the east and north by Westmeath, Cavan, and Leitrim; and on the west by Roscommon. It contains 263,645 acres, of which

55,247 are unimproved bog and mountain; and 15,892 lakes. Arable soil, for the most part, level and fertile. Property in rather large estates. Tillage farms generally small. Grazing is, however, the principal object of attention. Average rent of land, 12*s*. 3*d*. an acre. The Shannon forms the western boundary of the county, and it is intersected by the Inny, Curlew, and Tallen. The principal lake is Lough Gwanagh. It contains 6 baronies, and 23 parishes; and returns 2 members to parliament, both for the county. Principal towns and population in 1831: — Longford, 4,516; Granard, 2,069. Population of the county, in 1831, 112,558.

11. *Meath*, a maritime county, is bounded on the south by Kildare; on the east by Dublin, the Irish Sea, and Louth; on the north by Monaghan and Cavan; and on the west by Westmeath. It contains 567,127 acres, of which only 5,600 are said to be unimproved or waste. Surface for the most part flat; soil, clay or loam on limestone or gravel, and, in some places, of extraordinary fertility. Some large estates; but property on the whole a good deal subdivided. Grazing used formerly to be the principal occupation; but, since the close of the American war, tillage has been gradually extending, until, at present, about three fifths of the county are under the plough. Notwithstanding the rich soil and favourable situation of Meath, the agriculture, and the condition of the occupiers of land, are, speaking generally, alike bad. An uninterrupted succession of oats and other corn crops is not uncommon, continued sometimes even for the space of 12 or 20 years. The usual rotation is, wheat, oats, fallow, potatoes, and clover, generally without the application of manure, and the fallow badly executed. It was common, at no distant period, to work horses mixed with oxen, *six* being frequently yoked to a single plough; and yet, in despite of this management, the crops are often excellent. Within these dozen years, however, some material improvements have been introduced into Meath and the adjoining counties, in regard to the implements employed in agriculture, the rotation of crops, &c.; but their influence has not been, as yet, sufficient to change the general character of its rural economy; and the ground continues to be exceedingly dirty, and overrun with weeds. The condition, too, of the greater number of those who are reckoned large farmers, that is, who occupy from 50 to 150 acres, is very far from enviable: they are generally destitute of most sorts of comfortable accommodation. The cabins of the cottiers and inferior tenants are wretched beyond description. "They are often not sufficiently covered to keep out the rain: they are built of mud; and, as in the case of the farmers' houses, the clay is taken to build the walls from the spot on which they are raised, leaving the surface of the floor, and the ground immediately about the walls, the lowest part, and, of course, subject to receive all the surrounding damp; so much so, that I have often gone into a cabin and seen a hole dug in the floor to receive the water coming in at the door, or under the foundation, from whence it might be baled out with greater ease when collected. On this damp floor the family most commonly sleep, generally without a bedstead, none of them having a loft, except in town cabins, where the ground for building on is more valuable. The inside of their huts

is as filthy as their outward appearance bespeaks them to be. The labouring cottagers immediately under gentlemen fare better: their houses are, for the most part, water-fast; but as to their having lofts to sleep on, proper windows either for light or ventilation, or the floors raised above the level of the immediately surrounding ground, it seldom is the case. Few of them have chimneys, and fewer still have any other means of admitting the light than by opening the door, or a small hole in the wall, stopped up occasionally by a bundle of straw. The hog is generally the inmate; the hens constantly; and, if they are possessed of a cow, she also is introduced, and becomes one of the family." —(*Thompson's Survey of Meath*, p. 71.) In some instances, farm-houses and cabins have been improved since this passage was written; but it faithfully depicts their general condition at this moment in Meath, and throughout by far the largest portion of the island. The fare of the occupiers and cottiers is as mean as their habitations are wretched. Potatoes constitute three fourths of the food of the mass of the people; oatmeal and churned milk are sometimes added; but they seldom taste butchers' meat; the pig being usually sold to assist in paying the rent. The average rent of land in Meath is 18*s.* an acre, being more than is paid by any other Irish county with the exception of Dublin. The linen manufacture is carried on in some parts of the county. The Irish language is very generally spoken. Meath contains 12 baronies, and 147 parishes; and returns 2 members to parliament, both for the county. Principal river, the Boyne; but there are some small streams. Principal towns and population in 1831: — Navan, 4,416; Kells, 4,326. Population of county, in 1831, 176,826.

12. *Louth*, a maritime county, being the most northerly in the province of Leinster, is bounded on the south by Meath; on the east by the Irish Sea; on the north by Armagh; and on the west by Monaghan and Meath. It contains 206,261 acres, of which 14,916 are mountainous and waste. Surface mountainous towards the north; but in other parts undulating. Soil generally fertile. Estates of a moderate size. Farms of all sizes; but many very small; so much so, that in some parishes there is hardly one above 25 acres. Wheat, oats, and potatoes, principal crops. Clover and turnips only raised by proprietors. Improvements have been introduced; and some of the superior tenants are in comfortable circumstances. Condition of subtenants and cottiers same as in Meath. Average rent of land, 16*s.* an acre. The linen manufacture is carried on to a considerable extent. Principal rivers, Boyne and Dee. Louth contains 4 baronies, and 61 parishes; and returns 4 members to parliament; viz., 2 for the county, and 1 each for the boroughs of Drogheda and Dundalk. Principal towns and population in 1831: — Drogheda (which is a county and city), 17,365; Dundalk, 10,078; Ardee, 3,975; Carlingford, 1,319. Population of county, in 1831, 124,846.

MUNSTER.

1. *Cork*, a maritime county, and the largest in Ireland, is bounded on the south by St. George's Channel; on the east by Waterford and Tipperary; on the north by Limerick; and on the west by Kerry and

the Atlantic Ocean. It contains 1,769,563 acres, of which 700,760 are unimproved mountain and bog. This extensive district exhibits every variety of surface and soil: on the west it is rugged, rocky, and mountainous; the northern and eastern parts are distinguished by their richness and fertility. But for the want of timber, the country would be eminently beautiful. The largest tract of low ground lies to the north of the Blackwater; the most fertile soils being those which rest on limestone. Estates, in general, very extensive. Tillage farms, for the most part, very small: where they are larger, they are frequently held in partnership, and are generally divided among the family of the occupant. "A farmer often estimates his riches by the number of his sons, whose labour precludes any necessity of mercenary aid; but this lasts only for a short time. They marry at an early age, new families arise, a separation of interest takes place, and with it a partition of the farm." (*Townsend's Survey of Cork*, vol. i. p. 208.) Under the management of such persons, agriculture cannot but be in the most backward state. Potatoes, the crop on which the small farmers depend for subsistence, engross almost all their manure and all their labour. A great deal of work is done by the spade. Occasionally ploughing is performed by a species of combination — some supplying the plough, others the horses, and others the attendants. "The predilection for the plough," says Mr. Curven, speaking of the country near Macroom, "is universal, and white crops succeed each other as long as the land will produce them: when these fail, they have recourse to grass, which rises luxuriantly without cultivation; and what is unaccountable, exhausted as the soil must be considered by this treatment, the grass is not less nutritious than abundant. As far as I was able to judge, in spite of this barbarous treatment, deterioration from repeated cropping does not follow as a consequence here, except on strong clays." — (*Letters on Ireland*, vol. ii. p. 2.) But, though the general character of farming in Cork be highly objectionable, it has, happily, some exceptions. In Ireland infinitely more depends on the conduct of the landlord and his agents, than in England; and when they act on sound and liberal principles, and oppose themselves to the endless subdivision of the land, agriculture is in a greatly improved state; and the condition of the occupiers, though not to be compared with the condition of the same class in England, is much preferable to what it is on the estates of less intelligent and less considerate landlords. Several of the landlords of Cork have acted in the way now stated. Generally, however, agriculture is very backward, and the condition of the occupiers much depressed. Wheat, as well as oats, is largely produced. In 1832 there were exported from Youghall 107,090 quarters of oats, and 23,288 quarters of wheat, with 24,970 cwts. of flour. There are some considerable dairies in the vicinity of Cork, and other places; and very large quantities of butter, as well as of bacon and other articles of provision, are exported from Cork. Average rent of land, 13*s.* 7*d.* an acre. A considerable extent of new and level road has recently been constructed, partly at the expense of government, throughout districts hitherto in a great degree inaccessible. This is an improvement that cannot fail to have the most beneficial influence. Minerals, with the exception of limestone, of little importance. Some branches of the linen manufacture have been established at Cork and other towns; and there are some considerable distilleries. Principal rivers, — Lee, Bandon, Blackwater, Ilen, Funcheon, Bride, and Awbeg. The shore is, in many places, deeply indented by the sea. Cork Harbour and Bantry Bay, are among the finest asylums for shipping in the world. — (*Antè*, pp. 341. 343.) Cork contains 16 baronies, and 269 parishes; and returns 8 members to parliament; viz. 2 for the county, 2 for the city of Cork, and 1 each for the boroughs of Bandon, Mallow, Youghall, and Kinsale. Principal towns and population in 1831: — Cork, 107,016; Youghall, 9,608; Bandon, 9,917; Kinsale, 7,312; Mallow, 6,974; Fermoy, 6,976. Population of county, in ditto, 813,732.

2. *Kerry*, a maritime county, is bounded on the south and east by Cork and Limerick; on the north by the estuary of the Shannon; and on the west by the Atlantic. It contains 1,148,720 acres, of which 552,862 are unimproved mountain and bog, and 14,669 water. This is one of the wildest, most rugged, and mountainous of all the Irish counties. Macgillicuddys Reeks, the highest mountains in Ireland, lie to the west of Killarney; and there are several other mountainous ridges rising to between 2,000 and 3,000 feet in height. The scenery round the lake of Killarney has been often described, and is frequently visited, and deservedly admired. The coast of Kerry is deeply indented by the sea; and is not only the most westerly land in Ireland, but in Europe. The climate is uncommonly mild, but it is also particularly moist. The soil in the low grounds generally rests on a limestone bottom, and is often exceedingly fertile. Property in very large estates; but some of them leased for ever. A considerable portion of the county is held under partnership leases. Agriculture wretched. In the mountainous districts, cultivation is almost wholly performed by the *loy*, or spade; and when Mr. Young travelled in Ireland, there were some parishes in which there was not a single plough. Large flocks of goats are kept on the mountains, and are of infinite use to the poor people. There are some pretty considerable grazing and dairy-farms; and the native breed of Irish middle-horned cattle is said to be found in greater purity and perfection, perhaps, in Kerry than in any other county. "The cow of Kerry is truly a poor man's cow, living every where, hardy, yielding, for her size, abundance of milk of a good quality, and fattening rapidly when required." — (*Youatt on Cattle*, p. 179.) But, with the exception of the farms appropriated to grazing and the dairy, the rest of the arable land is divided into very small portions. The occupiers of these are, for the most part, utterly destitute of capital, and of every sort of comfortable accommodation. The potato is almost the only produce they reserve for themselves: every thing else being required to make up rent. This state of things is not, indeed, peculiar to Kerry, but extends over the greater part of the island. Generally, however, scarcities are more frequent and severe in the southern and western districts than elsewhere. It would, however, be unjust not to mention that improvements have, in several instances, been undertaken in this county, and carried on with a degree of success, which it may be

expected will lead to others. Those executed by Lords Headley and Lansdowne, especially the first, on two of the wildest properties in the county, show what may be effected by judicious management in increasing the productive capacities of the soil, and in meliorating the condition of the occupiers. Sea-weed, which abounds along the coast and in the bays, furnishes an exhaustless supply of the most valuable manure, which, were it properly applied, would be of the greatest service. The exports of wheat and other species of grain from Tralee are on the increase; but there has been a more than corresponding decrease in the exports of butter. Many parts of Kerry have been little explored by strangers; and, owing to the want of roads, they were, in numerous instances, nearly inaccessible; but this deficiency has been recently, in some degree, obviated. The Irish language is almost universally spoken; and ancient customs and superstitions preserve their ascendancy in a remarkable degree. Mr. Inglis mentions, that in the district round Dingle, in this county, marriages are contracted at from 13 to 15 years of age; and that there are instances of their being contracted at the premature age of 12! Average rent of land, 6*s.* 1*d.* an acre, being, with the exception of Donegal, the lowest rent paid by any county in Ireland. Manufactures can hardly be said to exist. The mineral riches of this county have not been explored. As much ore was produced from one copper mine as sold for 25,000*l.*; but the works have been long abandoned, more, it is said, from the ignorance of the workmen than from any defects in the mine. Principal rivers,—Feale, Lane, Roughan, and Mang. Kerry contains 8 baronies, and 83 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Tralee. Principal towns and population in 1831: —Tralee, 9,568; Killarney, 7,910; Dingle, 4,327. Population of county, in ditto, 263,126.

3. *Limerick,* an inland county, is bounded on the south by Cork; on the east by Tipperary; on the north by the Shannon, which divides it from Clare; and on the west by Kerry. It contains 674,783 acres, of which 91,981 are unimproved bog and mountain. Except on the southern, western, and north-eastern extremities, the surface is generally flat. Soil for the most part excellent. Mr. Young characterises a large tract, the "Golden Vale," as "the best he had ever seen." Tillage not so much extended as in some other counties. Property in large estates. Some grazing farms very extensive; but Mr. Wakefield affirms, that when he was in Ireland, "the grazing farms were rapidly colonising; and that the large farmers were taking in all the cottier tenants they could collect."—(Vol. i. p. 267.) This baneful practice has not, we apprehend, been since checked. Few cattle are kept in the "Golden Vale," butter-making being more profitable. The land has been almost all ploughed within the last few years; and though subjected to the severest treatment, such is its natural fertility, that it produces a good sward almost immediately after. From 10*l.* to 12*l.* an acre, are paid for *con-acre* land in the "Vale." But, however it may have been brought about, there has recently been a very great extension of cultivation in Limerick and the counties adjoining the Shannon. This is evinced by the wonderful

increase in the exports of corn and other articles of raw produce from the city of Limerick, which have more than doubled within the last dozen years. Thus the export of wheat, which in 1820 was 102,593 barrels, had in 1833 increased to 218,915 barrels. The increase of oats during the same period was from about 150,000 to above 400,000 barrels. In 1824, only 174 cwts. of flour were exported; whereas in 1833 the exports exceeded 37,000 cwts. The butter made in this county is of an inferior quality; and Mr. Wakefield says that in 1812 it was so bad as not to be fit to be eaten. Its preparation has, however, been improved in the interval; and it meets with a ready sale; the exports from Limerick having increased from 42,860 firkins in 1822, to above 75,000 firkins in 1833. These numbers must not, however, be supposed to represent the exports from the county of Limerick only; a large proportion of the produce being brought down the Shannon from other counties for shipment at the city of Limerick. But they show an extraordinary increase, to which this county has contributed quite as much as any one else. Along the Shannon, sea-sand is now very generally used as manure. Notwithstanding the increased production in Limerick and the contiguous counties, it is doubtful whether the condition of their cottiers be at all improved. It is said, indeed, by some of the witnesses examined before the Agricultural Committee of 1833, to have become perceptibly worse. — (*Min. of Evidence*, p. 373.) The condition of the poor in the city of Limerick is as wretched as can well be imagined; and is, in fact, disgraceful to a country calling itself civilised. — (*Inglis's Ireland in* 1834, vol. i. p. 304.) Condition of small tenants and cottiers same as in Cork and other southern counties. Some of the best long-horned cattle in the empire are produced and fattened in this county. Average rent of land, 18*s.* 8*d.* an acre. Some manufactures have been established in the city, but they are of no great importance. Principal rivers, exclusive of the Shannon, — Maig, Deale, and Mulkerna. Limerick contains 9 baronies, and 125 parishes; and returns 4 members to parliament, being 2 for the county, and 2 for the city of Limerick. The latter had, in 1831, a population of 66,554; and Rathkeale, the only other considerable town, 4972. Population of county, in ditto, 315,355.

4. *Tipperary*, an inland county, is bounded on the south by Cork and Waterford; on the east by Kilkenny and Queen's County; on the north by King's County and Galway; and on the west by Clare and Limerick. It contains 1,013,173 acres, of which 182,147 are unimproved mountain and bog, and 11,328 water. The mountainous districts are in the south-west, adjoining Waterford and Cork; in the south-eastern angle is Sliebhnaman mountain; and a chain of mountains runs across the county from Limerick to King's County. The bog is mostly a portion of the great Bog of Allen. With these exceptions, Tipperary consists principally of extensive and fertile plains, with a calcareous subsoil, forming as rich land as is to be met with in any part of the empire. Some very large estates; but many of a moderate size. Tillage farms generally small, and mostly held under middle-men. The *con-acre* system is very prevalent in some parts of this county, as it is indeed in most counties of Ireland, though it be

carried to the greatest extent in Connaught. By con-acre is meant a pernicious custom prevalent among the landlords and occupiers of the larger class of farms, of letting to the peasantry or cottiers small slips of land, varying from a perch to half an acre, for a single season, to be planted with potatoes or cropped. Old grass land is frequently let out on this system; and then it is usual to allow the surface to be pared and burned! The rent got for this land is enormous, running from 7*l.* to 12*l.* or 13*l.* an acre! Potatoes are invariably planted on con-acre land when it is broken up from grass; and afterwards it is usual to take from it successive crops of corn. Wherever this practice exists, there cannot, of course, be the least improvement; and nothing but the extraordinary fertility of the soil could enable it to produce any thing under so destructive a system. — (*Agricul. Committee of* 1833, *Min. of Evid.* p. 333, &c.) In many parts the entire dependence of the peasantry being on these *con-acre* lands, when the crop fails they are reduced to the extreme of distress, and have rarely any choice between starvation and begging, unless it be to enlist under the banners of Captain Rock. *Con-acre* tenants dare not remove the crop from the ground without permission, which is seldom granted till the rent be paid. In most cases they are allowed to abandon the crop for the rent, but this is an alternative they make every sacrifice to avoid, as it involves the loss not merely of their labour, but of their only means of supporting themselves during the ensuing season. (See *Appendix* F. *to Poor Inquiry, Ireland, passim.*) Grazing was formerly, and, we believe, still is, the principal employment in Tipperary. The native Irish breed of long-horn cattle attain to a very large size, and are found in the greatest perfection in this county. Many thousands are annually exported. There are, also, many fine flocks of long-woolled sheep. Average rent of land, 17*s.* 18½*d.* an acre. Peasantry exceedingly depressed and turbulent. The manufacture of broad cloth is carried on to some extent at Carrick. Tipperary has copper and lead mines, coal, slate, &c. Exclusive of the Shannon, the principal river is the Suir. Tipperary contains 10 baronies, and 186 parishes; and returns 4 members to parliament, 2 being for the county, and 1 each for the boroughs of Clonmel and Cashel. Principal towns and population, in 1831: — Clonmel, 15,134; Carrick-on-Suir, 9,226; Nenagh, 8,466; Thurles, 7,084; Cashel, 6,971; Tipperary, 6,972; Roscrea, 5,512. Population of county, in 1831, 402,563.

5. *Waterford*, a maritime county, is bounded on the south by St. George's Channel; on the east by Waterford harbour, which separates it from Wexford, and by Kilkenny; on the north by Tipperary; and on the west by Cork. It contains 471,281 acres, of which 118,034 are unimproved mountain, with but little bog. Though in general coarse, there is a considerable extent of fine land in this county, particularly in the south-east quarter; and the mountains afford good pasturage for cattle. Estates for the most part very large: the management of the largest, which belongs to the Duke of Devonshire, was severely censured by Mr. Wakefield. But this censure is no longer applicable, it having been, during the last twenty years, managed on the most liberal principles, and greatly improved.

—(*Bicheno's Ireland and its Economy*, p. 103.) Here indeed, and generally throughout Ireland (and we believe that the same may be truly affirmed of England), tenants and occupiers on large estates are decidedly better off than those on the smaller class of properties. This is the principal dairy county of Ireland. When it was visited by Mr. Young, not one thirtieth part was under the plough.—(*Tour in Ireland*, 4th ed. p. 329.) The proportion in tillage is now, however, much larger. This has principally arisen from the vicious custom of dividing farms. "In this county," says Mr. Wakefield, "when the eldest daughter of a farmer marries, the father, instead of giving her a portion, divides his farm between himself and his son-in-law; the next daughter gets a half of the remainder; and this division and subdivision is continued as long as there are daughters to be disposed of. The sons are left to shift for themselves the best way they can." (Vol. i. p. 280.) Some of the dairy farmers are in easy circumstances; but the condition of the tillage farmers and cottiers is much the same as in other parts of Munster. Some very material improvements have been introduced within the last dozen years into this and the contiguous counties. Improved swing-ploughs, made of iron, drawn by two horses driven by the ploughman, are now become very general. Land is kept cleaner; there has been a very great increase in the quantity of lime used as manure; green crops are more attended to; and the quantity of wheat raised within these few years has more than doubled; while there has been a decided falling off in the production of oats. There has also been a large increase of the exports of butter and bacon. Waterford now ranks as one of the first ports of Ireland, and, indeed, of Europe, for the exportation of raw produce; the average annual value of the shipments from it of native Irish articles being supposed to amount at present to about *two millions* sterling. Average rent of land, 12*s.* 6*d.* an acre. Minerals, copper, iron, &c. Manufactures not very important; a considerable cotton manufacture has, however, been established at Portlaw, and some glass is made at Waterford. Principal rivers,—Blackwater, Suir, and Bride. Waterford contains 7 baronies, and 74 parishes; returns 5 members to parliament, being 2 for the county, 2 for the borough of Waterford, and 1 for Dungarvan. Principal towns and population in 1831:—Waterford, 28,821; Dungarvan, 6,527; Lismore, 2,894. Population of county, in 1831, 177,054.

6. *Clare*, a maritime county, is bounded on the south by the river Shannon, which separates it from Kerry and Limerick; on the east by Tipperary; on the north by Galway; and on the west by the Atlantic. It contains 802,352 acres, of which 259,584 are mountain and bog, and 18,655 water. The arable land is, for the most part, light, but very fertile. The low grounds, known by the name of the *Corcasses*, on the Shannon and Fergus, are celebrated for the richness of their pastures, which are equal to the fattening of the largest bullocks. Property, in large estates. A considerable extent of land employed in grazing. Tillage farms generally small, varying from 1 or 2 acres to 40 or 50; but those of the larger size rare. Partnership tenures not so common as formerly, many proprietors, impressed with a con-

viction of their pernicious tendency, having exerted themselves to effect their abolition. Oats and potatoes are the principal objects of attention; but wheat and barley are now extensively raised. Husbandry improving, but still in a very wretched state. The practice, in many places, is either to burn or manure, for, 1st, potatoes; 2nd, potatoes; sometimes, 3rd, potatoes; 4th, wheat; and then follow repeated crops of oats, till the soil is completely exhausted: it remains then for several years almost wholly unproductive, not even producing weeds, but of the humblest growth.—(*Dutton's Survey of Clare*, p. 69.) Along the coast sea-weed and sea-sand is a good deal used as manure. In the mountainous parts the *loy* is extensively employed. Average rent of land, 11*s*. 3*d*. an acre. Habitations similar to those in the contiguous counties; with this difference, that the cottages, instead of being of turf or clay, are mostly built of stone, without cement. Limestone abounds; and coal, ironstone, lead, &c., have been found, but not wrought. Manufactures can hardly be said to exist. Principal river, Shannon; there is also the Fergus, and some smaller streams. Clare contains 9 baronies, and 79 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Ennis: the latter, the principal town, had, in 1831, a population of 7,711. Population of county, in ditto, 258,322.

ULSTER.

1. *Cavan*, an inland county, is bounded on the south by Longford, Westmeath, and Meath; on the east by Monaghan; on the north by Fermanagh; and on the west by Leitrim and Longford. It contains 473,449 acres, of which 30,000 are unimproved mountain and bog, and 21,987 water. Surface hilly, and soil generally poor. There are two large estates, but the rest are of moderate size. About four-fifths of the land is under tillage. Occupancies small, and not exceeding from six to eight acres at an average. The competition for land is excessive; and the remission of rents all but unknown. "Agriculture in the most wretched state imaginable. The rotation is—1st, potatoes from ley; 2d, potatoes repeated with some manure; 3d, wheat, flax, barley, or oats; 4th, 5th, and 6th, oats; 7th, potatoes manured; and so on, as long as they can. Not much wheat is grown. If they have a field in ley, likely to yield a better crop on which to exercise this scourge system, they leave the land that they have deprived of its productive powers, to come round by time for a repetition of their former operations."—(*Appendix* F. *to Report of Poor Inquiry Commissioners*, p. 418.) At no very distant period, oats were supposed to be to other grain in the proportion of 70 to 1; but their preponderance, though still great, has been diminished in the interim. Numbers of farms are held in common; but the practice is said to be declining. No clauses are inserted in leases enforcing any particular system of management. Spade cultivation general;—in some parishes there is hardly, in fact, a plough; and the miserable implements called ploughs, that do exist, are "made by the occupiers themselves, at an expense of 7*s*. or 8*s*. each." Rent of land 13*s*. 7½*d*. an acre. Condition of the farmers and labourers

quite as bad as any in Ireland: it is said to have changed considerably for the worse of late years. Notwithstanding the extreme lowness of wages when the people are employed, they are said to spend more than 1*d.* a day in smoking: on the other hand, however, the pernicious habit of dram-drinking has considerably diminished; so much so, that we are told there is not at present one tenth part of the drinking that there was some years since; but this is, most probably, a good deal exaggerated. Linen manufacture much declined. — (*Binn's Miseries and Beauties of Ireland*, pp. 309—325.) Minerals various, but little known. The Shannon has its principal source in this county; and there are, besides, the Erne, Woodford, Annalee, &c. Cavan contains 7 baronies, and 30 parishes; and returns 2 members to parliament, both for the county. Cavan, the principal town, had, in 1831, a population of 2,931. Population of county, in ditto, 227,933.

2. *Fermanagh*, an inland county, is bounded on the south by Cavan; on the east and north by Monaghan, Tyrone, and Donegal; and on the west by Leitrim. It contains 471,348 acres, of which 101,952 are unimproved bog and mountain, and 48,977 water. Surface varied and picturesque. Lough Erne is a fine sheet of water. — (See *ante*, p. 337.) This county is better wooded than most others in Ireland. Soil tolerably fertile. Estates generally large. Farms of all sizes; some large, but a great number small. A good many cattle bred on the high grounds. Agriculture is more advanced in the northern part of Fermanagh than in any other district of Ulster; but in the other parts of the county it is very backward. Not many years ago the peasantry were accustomed to yoke their plough to the horses' tails! Oats, barley, wheat, flax, and potatoes, principal crops. Average rent of land, 12*s.* 3*d.* an acre. Protestants are numerous in this county, and they are said by Mr. Wakefield to be a fine race of people, much superior to those in the other northern counties, or to their Catholic neighbours. The latter are, for the most part, miserably poor, the cottiers living in wretched huts. Mr. Inglis says, that the condition of the land occupiers in Fermanagh is superior to the condition of the same classes in most other parts which he visited. Notwithstanding the high rents paid for the land, he found all admit, Catholic as well as Protestant occupiers, that they could afford to eat butchers' meat three times a week, having, in addition, as much milk and butter as were required for their family; or that if they chose to live more abstemiously, they could lay aside a little money. — (*Ireland in* 1834, vol. ii. p. 168.) Iron ore is found in different places. Linen manufacture extensively introduced. Fermanagh contains 8 baronies, and 18 parishes; and returns 3 members to parliament, 2 for the county, and 1 for the borough of Enniskillen. Enniskillen, the principal town, had, in 1831, a population of 6,116. Population of county, in ditto, 149,763.

3. *Monaghan*, an inland county, is bounded on the south by Meath and Louth; on the east by the latter and Armagh; on the north by Tyrone; and on the west by Fermanagh and Cavan. It contains 327,048 acres, of which 9,236 are unimproved mountain and bog, and 7 844 water. The face of the country resembles that of Cavan: it is

hilly, but the hills are not of large dimensions, and are mostly arable. It is moderately fertile. There are a few very large estates, and a great many small ones. Competition for land extreme, and farms so very small, that some years since it was estimated that the larger class would not average 25 acres, nor the smaller, and far more numerous class, 6 acres. — (*Wakefield*, i. p. 270.) *Con-acre* general here, and in most places throughout Ulster. Agriculture in the most depressed state. Spade more in use than the plough; the latter being an implement that requires the exertions of several occupiers to bring into operation. Principal crops, oats, potatoes, and flax; the latter being very extensively cultivated. Wheat and barley more raised now than formerly. Horses ill-fed, weak, and incapable of effectual labour. A good deal of butter is made, but there are no large dairies. Breed of cattle a good deal improved. Goats kept by the cottiers for the sake of their milk. Average rent of land, 13*s.* 3¾*d.* an acre. The linen manufacture is very widely diffused over this and the surrounding counties. Those who carry it on are, at the same time, mostly all engaged in agriculture. It may, however, be doubted whether this combination of employments has had any good effect. On the contrary, it seems injurious both to the interests of agriculture and of the manufacture. The former has made no progress whatever; and the latter, after being forced forward by the aid of bounties and prohibitions, appears, now that these have been repealed, to be in a very unsatisfactory state. Those who compare the progress made by the linen manufacture at Dundee, during the last 20 years, and in the north of Ireland, will see the wide difference between a business conducted by people of capital and skill, addicted wholly to that particular department, and by poor cottiers, unable to avail themselves of machinery, and having their attention constantly withdrawn to the culture of their little plots of ground. We are convinced that neither agriculture, nor the linen manufacture, will be materially improved till they be separated, and carried on by different sets of individuals. Monaghan contains vast beds of limestone; lead ore of a rich quality; and indications of coal have also been discovered. There are no rivers of any importance. It contains 5 baronies, and 19 parishes; and returns 2 members to parliament, both for the county. Monaghan, the principal town, had, in 1831, a population of 3,848. Population of county, in 1831, 195,536.

4. *Armagh*, an inland county, is bounded on the south by Louth; on the east by Down; on the north by Lough Neagh and Tyrone; and on the west by Monaghan. It contains 328,183 acres, of which 42,472 are unimproved bog and mountain, and 18,394 water, being part of Lough Neagh. Surface varied and interesting; being mountainous in some places, and undulating and flat in others. Soil generally fertile. A large portion of this county belongs to church and college establishments, and to corporations: some noblemen and gentlemen have good estates; minor estates numerous, and the tenures by which they are held such as to divide them into the minutest portions. Farms very small; running from 2 and 5 to 20 acres; those that amount to 40 or 50 acres are reckoned very large, and are generally found in the Fews mountains. Out of 1500 tenants on the Gos-

ford estate, in the barony of Fews, there are not more than 60 or 70 who hold so much as 20 acres. This is the estate on which Mr. Blacker originally introduced his celebrated system of green crops and stall feeding into the economy of the smallest farms, or at least of those from 3 to 6 acres. Though productive of considerable improvement, it has been praised far beyond its deserts. There can be nothing like really good and efficient agriculture on farms of 6, or even 12 or 20 acres. Potatoes, oats, and flax, principal crops; but very excellent wheat is raised in various parts, particularly in the vicinity of the city of Armagh, and in the whole north-east district of the county. Near Loughall, Charlemont, &c. there are some very productive orchards, whence a good deal of fruit is sent to Belfast, and some is even said to find its way to Glasgow. Some dairy cows are kept, and a considerable quantity of butter is made. Cattle of a small stunted breed are reared in the mountainous districts; sheep, few and inferior. Average rent of land, 11*s.* 6½*d.* an acre. Linen manufacture diffused over the county, as in Monaghan. Middlemen, but little known. Habitations of the bulk of the lower orders decidedly preferable to those of the same class in most other parts of Ireland, excluding the neighbouring counties of Down and Antrim. They are generally whitewashed, well thatched, and have a clean and comfortable appearance. Notwithstanding their alleged propensity to jockeyship, the inhabitants may be advantageously compared, in respect of character, with those of most other districts. There are some beautiful marbles. Principal rivers, — Bann and Blackwater, which run into Lough Neagh, and Newry, which falls into Carlingford Bay: the latter is joined to the Bann by the Newry canal, completing the navigation betwen the sea and the lake. Some very extensive flour mills have been erected on the Blackwater. Armagh contains 5 baronies, and 20 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the city of Armagh. Principal towns and population in 1831: — city of Armagh, 9,470; Lurgan, 2,842. Population of county, in ditto, 220,134.

5. *Down*, a maritime county, is bounded south and east by the Irish Sea and the North Channel; north, by Belfast Lough, and Antrim; and west, by Armagh and a small part of Louth. It contains 611,404 acres, of which 108,569 are unimproved mountain and bog. The mountains of Mourne, in the southern part of Down, are amongst the highest in Ireland, and there are some considerable hills in other parts; but, with these exceptions, the surface is abundantly level. Soil of a medium degree of fertility. There are some very large estates; but property is, notwithstanding, a good deal subdivided. Large farms of from 200 to 500 acres were, about the middle of last century, common in Down, and other districts in the north of Ireland; but these have now entirely disappeared. Those occupied by farmers who have recourse to no other business may, at present, run from 20 to 50, and in a few instances to 100 acres; while those occupied by persons partly engaged in the linen trade, which is here universally diffused, and partly only in agriculture, are of all sizes from 1 to 20 acres, probably averaging about 4 acres. In consequence of the decline of the linen manufacture, and of the po-

pulation having nothing but the land to depend upon, the size of occupancies has been materially diminished of late years. The competition for small patches of land is quite intense. On estates where the tenants, though they hold at will, are not disturbed, provided they pay their rents, they frequently get, on assigning their holdings to others, sums that would elsewhere appear almost incredible. As much as 100*l.* have been paid for the "tenant-right" to a holding of only seven acres, burdened with a rent of 1*l.* an acre! and the usual price obtained for the "tenant-right" to land let at a rack-rent, is 10*l.* an acre! (*Binn's Miseries and Beauties of Ireland*, i. p. 85. 114. &c.) Notwithstanding this monstrous practice, it is still true that a good many improvements have been made within the last dozen years; but the poverty of the occupiers and the smallness of their possessions render the general introduction of any thing like a good system of farming next to impossible. Turnips are but rarely seen, and potatoes are still frequently planted on the "lazy bed" plan. Corn crops follow each other, only partially interrupted by potatoes, peas, and flax; the culture of the latter having increased very materially during the last 7 years. A good number of cows are kept, and horses are reared in the mountainous districts. Many hogs fattened. Average rent of land, 16*s.* an acre. There are numerous bleaching grounds. The houses of the farmers are, many of them, whitewashed, and have a neat appearance; but there are a great number of houses of a very inferior description. "The weavers," says Mr. Wakefield, "may be divided into a number of classes, according to the property they possess. Some are poor, but others live in comparative affluence. It is common for a manufacturing farmer, who occupies not more than 10 acres of land, to let a part of his 'take' to a subtenant at will, who erects thereon a wretched cabin, and employs one or two more looms for the benefit of his landlord. The condition of this subtenant is not calculated to inspire a high idea of his domestic comfort; but, however mean his living, there is a class still lower, that of the person who occupies what is called a 'dry cot,' or a habitation without any land. The owner of such a dwelling purchases conacres, and raises some oats and potatoes. The mere manufacturers of yarn are a still lower class." — (Vol. ii. p. 740.) The population, however, though far from being in a comfortable situation, is, generally speaking, decidedly better off than in most other Irish counties. Had it not been for the prevalent custom of splitting the land, — a custom to which most of the poverty and distress existing in Ireland may be immediately ascribed, — the peasantry of Down would not have had much reason to envy those of most British counties. Minerals few, and of little importance. Principal rivers, — Bann, Lagan, and Newry. Down contains 8 baronies, and 60 parishes; and returns 4 members to parliament, being 2 for the county, and 1 each for the boroughs of Newry and Downpatrick. Newry had, in 1831, 13,065 inhabitants; Downpatrick, 4,784; and Ballymacarret, 5,168. Population of county, in 1831, 352,012.

6. *Antrim*, a maritime county, is bounded on the south by Down and Belfast Lough; on the east by the North Channel; on the north by the Atlantic; and on the west by Londonderry and Lough Neagh. It

contains 758,866 acres, of which 225,970 are mountain and bog, and 49,790 water, being part of Lough Neagh, which lies principally in this county. Surface very various. On the north and east, it is mountainous, and destitute of wood; there is, also, a mountainous ridge between Belfast and Lough Neagh, and a good deal of rugged ground in other places. The flat ground bordering on Lough Neagh is, in many places, boggy. Still, however, there is a large extent of fertile land; and, in the vicinity of Belfast especially, the neat whitewashed houses of the manufacturers give it a cheerful appearance. Estates mostly very large. Those of Earl O'Neil, the Marquises of Hertford and Donegal, and the Antrim family, being among the largest and most valuable in the empire: but large portions of the last two are let in perpetuity. Except in the mountainous districts, farms are small. Agriculture, in most respects, similar to that of Down. Improved implements and practices have been extensively introduced, and would have made a much greater progress, but for the minute division of land. Breed of cattle bad, but in the course of being meliorated; many goats kept in the mountains. Belfast, and the country round, have more of an improved appearance, and the people look more cheerful and happy than in any other part of Ireland. This has been ascribed to the linen manufacture; but we agree with Mr. Wakefield in opinion, that it is rather to be ascribed to the commerce of which Belfast is the centre, and to the introduction of the cotton manufacture. Where the linen manufacture alone is established, the condition of the peasantry seems little, if at all, better than in districts without manufactures. Average rent of land, 16*s.* an acre. A coal mine is wrought at Bally Castle, in this county; but the coals are bituminous, and of bad quality; so that those used in Belfast are brought from Britain. On the north coast of Antrim, is the splendid assemblage of basaltic columns denominated the Giants' Causeway. — (See *Sea Coast*, p. 346.) Principal rivers, — Bann and Lagan; the former constituting, in great part, the western, and the latter the southern, boundary of the county. Antrim contains 8 baronies, and 77 parishes; and returns 6 members to parliament, being 2 for the county, 2 for the borough of Belfast, and 1 each for Carrickfergus and Lisburn. Principal towns and population in 1831: — Belfast, 53,287; Lisburn, 5,218; Carrickfergus, 8,706. Population of county, in ditto, 316,909.

7. *Londonderry*, a maritime county, is bounded on the south by Tyrone; on the east by Lough Neagh and Antrim; on the north by the Atlantic and Lough Foyle; and on the west by Donegal and Tyrone. It contains 518,270 acres, of which 136,038 are mountain and bog, and 9,565 water; being mostly part of Lough Neagh. Surface in many parts mountainous; but the vales are extensive and fertile. With the exception of the lands belonging to the church, and to corporations, the entire property of this county was granted by James I. to the principal London Companies; so that the land is mostly held from them, either under terminable or interminable leases. Mr. Sampson, in his survey of this county, states, in reference to the size of farms, that they vary from 2 to 200 acres. "Both these," he observes, "are extremes: the average is from 5 to 20. Where there has been

a perpetuity, or a long lease, it is *split;* that is, the children are settled upon divisions of the father's farm; by which means leases of 40 acres come to be parcelled, in two or three generations, into patches of 4 or 5 acres. It seems as if the newly let lands were disposed of under some similar system of parcelling. I could give instances where whole districts are subdivided into 6 or 7 acres, and rarely can boast a farm of 12 or 14." — (p. 249.) Within these few years the owners of some estates have become sensible of the injurious influence of this system, and have, where an opportunity has been afforded, exerted themselves to prevent its being carried further, and to consolidate some of the small occupancies; but their efforts have not hitherto been such as materially to affect the average size of farms in the county, which is not believed to exceed 12, or, at most, 14 English acres. It is almost needless, seeing the way in which the land is occupied, to add that agriculture, though in some respects improved, is still, generally speaking, in a very low state. Principal crops, potatoes, oats, and flax. Mr. Wakefield thought, that owing to the wetness of the climate, it would be useless to attempt introducing wheat. But, even at the time when his work was published, its cultivation was carried on to a considerable extent; and it has since continued rapidly to increase, not in this only, but in most other counties in the north of Ireland, and, indeed, throughout the whole country. — (See *post*, sect. *Agriculture.*) Average rent of land, 12*s.* 2¾*d.* an acre. Condition of the small farmers and cottiers very unprosperous. Some of the houses of the latter are rough-cast and white-washed, like those of the same class in Down; but the houses of the greater number, particularly in the mountainous districts, are alike filthy without and within. Linen manufacture widely introduced. Various minerals have been found, but of no great importance. Besides the Bann, which, for the most part, divides Londonderry from Antrim, the principal rivers are, the Foyle, the Faughan, and the Roe. Londonderry is divided into 6 baronies and liberties, and 31 parishes; and returns 4 members to parliament, being 2 for the county, 1 for the city of Londonderry, and 1 for the borough of Coleraine. Principal towns and population in in 1831: — Londonderry, 19,620; Coleraine, 5,752; Newton-Limavady, 2,428. Population of county, in 1851, 222,012.

8. *Tyrone*, an inland county, is bounded, on the south by Fermanagh, Monaghan, and Armagh; on the east by Lough Neagh; on the north by Londonderry; and on the west by Donegal. It contains 754,395 acres, of which 171,314 are umimproved mountain and bog, and 27,261 water, being in part a fraction of Lough Neagh. Surface in many places, especially on the north and west, rough and mountainous: but there is, notwithstanding, a large extent of fertile land. Property mostly in very large estates. Farms of various sizes; those in the mountainous districts large, and seldom much subdivided. Tillage farms small, and generally held under partnership leases. — (See *Galway.*) Wherever this mode of letting land prevails, agriculture is execrable. A great deal of work is done by the spade; and where ploughs are used, they are sometimes drawn by horses, bullocks, and milch cows, all yoked together! Potatoes and oats the principal crops. Cattle and sheep very inferior. "Tenants may do what they will in

regard to the management of their farms, if they only pay the rent." (*Poor Inquiry, Appendix F.*, p. 323.) Average rent of land, 14*s.* 6*d.* an acre. Habitations of the bulk of the people extremely mean: they live principally on oatmeal and potatoes, rarely tasting butcher's meat. Linen manufacture pretty generally diffused. A coal mine is wrought between Dungannon and Stewartston, but the coal is inferior. There is a good pottery near Dungannon. This is one of the counties in which illicit distillation was most prevalent. Principal rivers, — Blackwater, Foyle, Ballinderry, with several others of inferior importance. Tyrone contains 4 baronies, and 35 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Dungannon. Principal towns and population in 1831: — Strabane, 4,700; Dungannon, 3,515; Newtonstewart, 1,737. Population of county, in 1831, 304,468.

9. *Donegal*, a maritime county, occupying the north-west corner of Ireland, is everywhere bounded by the sea, except on the south-east, where it touches Fermanagh; and on the east, where it is bounded by Tyrone and Londonderry. It contains 1,165,107 acres, of which 644,371 are mountain and bog. Donegal is deeply indented by arms of the sea; and its surface is, in most places, mountainous, rugged, and dreary. There are, however, extensive tracts of good land, particularly on its east side, which, under proper management, would yield abundant crops. Climate wet and backward. Property in very large estates; but some of them leased for ever. Farms of various sizes; in the low grounds, from 5 to 40 acres; but in the mountainous districts, they run from 40 to 500. Partnership tenures common, but diminishing. Agriculture as bad as possible. A great deal more labour performed by the spade, or *loy*, than by the plough; but in some of the mountainous districts, where the spade is principally used, the plough could hardly be introduced. Potatoes raised everywhere, and the great dependance of the people; oats and flax also largely cultivated, but comparatively little of any other sort of grain. Cattle, a small stunted breed. Average rent of land, 6*s.* an acre, being the lowest of any county in Ireland. People very badly off. "Cabins tolerably snug, but intolerably unclean, as, in general, the cattle and hogs herd with the family; and in summer, when all the mountains are dry, a marsh of filth surrounds the cabin door." — (*M'Parlan's Survey of Donegal*, p. 65.) English language little spoken in many districts. Linen manufacture pretty widely diffused; but the condition of the people does not seem to be improved by it, and it is far from prosperous. The barony of Innishowen, famous for its illicit whiskey, and the prevalence of smuggling among its inhabitants, is in this county. Principal rivers, — Fin, Erne, Dale, Guibarra, and Swilly. Donegal contains 5 baronies, and 42 parishes; and returns two members to parliament, both for the county. Principal towns and population in 1831: —Ballyshannon, 3,775; Letterkenny, 2,168. Population of county, in 1831, 289,149.

CONNAUGHT.

1. *Galway*, a maritime county, the most westerly in this province, is bounded on the south by Galway Bay, Clare, and Tipperary; on the east by King's County and Roscommon; on the north, by the latter and Mayo; and on the west by the ocean. It contains 1,510,592 acres, of which 476,997 are mountain and bog, and 77,922 water, consisting principally of Lough Corrib. The southern and western parts of this county are mountainous and wild; but the extensive tract to the eastward of Lough Corrib and Galway town is, for the most part, flat. The soil of this portion is dry and fertile; it rests on a substratum of limestone, and is, in some places, so thin as not to be fit for tillage, though it yields the finest pasture. Climate mild, but there is an excess of moisture. There are several very large estates. Connamara, belonging to Mr. Martin, occupies the whole north-western portion of the country; but it is almost in a state of nature, and is worth comparatively little. Farms of all sizes; but those in tillage, for the most part very small. It has been the common practice to grant partnership leases to an indefinite number of tenants, very often twenty or more. "These people divide the land, and give portions to their children, which consist of one fourth or one fifth of what they call a man's share; that is, of the land which originally belonged to one man in the lease. A certain portion of the whole farm, or *take*, is appropriated for tillage, and this portion is then divided into lots, perhaps 20 or 30. These lots are again subdivided into fields, which are partitioned into smaller lots, each partner obtaining one or two ridges; but these ridges do not continue in the hands of the same occupier longer than the time they are in tillage. The pasture is held in common, and the elders of the village are the legislators, who establish such regulations as may be judged proper for their community, and settle all disputes that arise among them. Their houses stand close to each other, and form what is here called a village." — (*Wakefield*, vol. i. p. 260.) Mr. Dutton, in his Survey of this county, published in 1824, bears testimony to the obviously destructive influence of this system on agriculture, and on the condition of the occupiers of the soil. — (p. 153.) Potatoes and oats the most common crops; but the former are not so extensively cultivated as in some other parts of Ireland. Very good wheat is produced, particularly to the south-east of Galway; and there has, within the last dozen years, been a very great increase in the growth of oats and barley: but is doubtful whether this has been, to any material extent at least, the result of an improved system of tillage, and whether it be not wholly ascribable to that improvident breaking up of pasture land that has been carried to the most injurious excess here, and throughout the whole province. — (*Report of Agricultural Committee of* 1833, *Min. of Evid.*, p. 348.) The improved Scotch plough, drawn by 2 horses, is met with in some places; but the old plough of the country, drawn by 4 or more horses, having, exclusive of the ploughman, one or two drivers, and a man to press on the beam to keep the instrument in the ground, is in common use. A great deal of work is also performed by the *loy*, or spade. Excellent long-horned cattle are met

with in this county. Mr. Wakefield says that they are fully equal to any in England. There are also some excellent flocks of sheep. Average rent of land, 12*s.* 1*d.* an acre. The linen manufacture has been introduced into this county, and there is no other of any importance. The habitations of the lower ranks are, with few exceptions, quite as wretched as any to be found in Ireland. The farm-houses are also poor, miserable, and ill situated. After the Shannon, the most considerable rivers are the Suck and the Black River. Galway contains 16 baronies, and 116 parishes; and returns 4 members to parliament, being 2 for the county, and 2 for the borough of Galway. Principal towns and population in 1831: — Galway, 33,120; Loughrea, 6,268. Population of county, in 1831, 414,684.

2. *Mayo*, a maritime county, is bounded on the south and east by Galway, Roscommon, and Sligo, and on the north and west by the ocean. It contains 1,355,048 acres, of which 425,124 are mountain and bog, and 57,940 water, consisting principally of Lough Mask, Lough Con, Lough Carra, &c. This county has some of the highest mountains in Ireland; and some parts of it are little better than uncultivated wastes. There are, however, many fertile valleys; but, owing to the limestone protruding through the surface, considerable portions of the flat country are unfit for tillage, though they afford excellent pasture. Property in immense estates. A good deal of the land let on the partnership or village system, as described in Galway. It is said, however, that this system is on the wane; and it is to be hoped that this is the case, as it opposes an effectual obstacle to the introduction of anything like good agriculture, and to the growth of industrious habits. It would seem, however, that the still more ruinous practice of *con-acre* (see *ante*, p. 381.) is rapidly extending itself, not only over this county, but over Galway, and the entire extent of Connaught. It threatens, indeed, unless its progress should be arrested, of which there seems to be no near prospect, to spread itself over all the pasture land of the province. "The competion for land in Connaught is almost incredible: there is no rent you ask that will not be promised." — (*Report of Agricultural Committee of* 1833, *Min. of Evid.*, p. 352.) It is astonishing, too, how well these exorbitant rents are paid. In fact, the peasantry have no means of existing without land; so that we need not be surprised that pasturage is rapidly diminishing. In the small tillage farms, every thing, except potatoes and a little oatmeal, is sold to make up the rent. "In travelling through the country," says Mr. Wakefield, "I could see nothing but bad tillage and a thin population. The people in general were dressed in woollen clothes of a dark colour, and their cabins, which seemed to be more confined than in other parts of Ireland, had a most miserable appearance, and gave a dull and gloomy aspect to the whole country." — (Vol. i. p. 35.) It would seem, from the statements of Mr. Inglis, that but little, if any, improvement has taken place since the publication of Mr. Wakefield's work. He says that the linen manufacture, which had been extensively carried on in the vicinity of Castlebar, Westport, Newport, &c., and had there, as everywhere else, led to a division of the land, has materially declined, and that, in consequence, the condition of the occupiers "has very much

deteriorated." —(*Ireland in* 1834, vol. ii. p. 98.) Cattle long-horned, and improved by crossing with the English breed. Thirty-years ago, some graziers used to hold as much as 3,000 acres; but at present few occupy more than the tenth part of this extent of land. The best grazing lands are said to fetch about 40*s.* the Irish acre. Average rent of the county, 8*s.* 6*d.* the statute acre. Iron was formerly made in this county; but the business was abondoned from the want of fuel. Though the houses are all thatched, there is abundance of excellent slate. Principal rivers, — Moy, Guishden, Deel, Owenmore, and Robe, besides inferior streams. The coast is deeply indented by the sea; and on the west it is fenced with numerous islands. There are some excellent harbours. Mayo contains 9 baronies, and 68 parishes; and returns 2 members to parliament, both for the county. Principal towns and population in 1831: — Castlebar, 6,373; Ballina, 5,510; Westport, 4,448. Population of county, in 1831, 366,328.

3. *Roscommon*, an inland county, has Galway on the south and south-west; on the east it is separated from Longford, Leitrim, and King's County by the Shannon; on the north and north-west, it has Sligo and Mayo. It contains 609,405 acres, of which 131,063 are bog and mountain, and 24,787 water. There are some mountain tracts in the northern parts of the county and elsewhere, but, in general, its surface is nearly flat; exhibiting, for the most part, either green fields or bogs. Substratum principally limestone. Pastures most luxuriant. The employment of stone fences is nearly peculiar to this county. Estates very large; but many of them let on perpetual leases, the holders of some of which form an intermediate class between the great proprietors and the occupiers. A large proportion of land in pasture; but latterly tillage has been rapidly extending. Several improvements have been introduced both in the plan of husbandry and in the instruments employed in carrying it on. "But the general system of agriculture, excepting on lands held by wealthy individuals, remains still in a very imperfect state; and the smaller farms are cultivated in a manner at once slovenly and wasteful." — (*Weld's Survey of Roscommon*, p. 654. Dublin, 1832.) Partnership tenures diminishing. Tillage farms very generally small. Oats and potatoes principal crops; but wheat is now rather extensively cultivated. A good deal of work done by the *loy*. Cattle long-horned; sheep long-woolled; both breeds good; few dairies. Average rent of land, 13*s.* an acre. Some new cottages, on a few estates, are neat and comfortable, but the great majority continue as bad as possible. The same may be said of the farm-buildings. There are veins of coal and ironstone in the northern parts of this county, to the west of Lough Allen. These had been occasionally wrought to some extent for a considerable period; but, in general, to the heavy loss of those by whom the works were carried on. It was, however, contended that this happened from the want of capital, or want of skill on the part of those employed; and the most exaggerated and delusive accounts were, at the same time, published of the value of the mines. At length, during the memorable year 1825, three companies were formed for working the coal and iron mines at Arigna and other places in this county. But one of these, after examining the ground, pru-

dently declined proceeding any farther: the energies of another were paralysed by the fraud, jobbing, and mismanagement of some of its directors and agents; and the third (the Irish Mining Company), an enterprising and well-conducted association, have recently abandoned the undertaking, their collieries having proved, if not absolutely worthless, not worth the cost of working them. — (*Weld's Survey*, pp. 33. 77. 682., &c.) The linen manufacture was at one time pretty extensively diffused over this county; but it has within these few years materially declined. Being washed throughout its whole extent by the Shannon, there are not many Irish counties that have greater facilities than Roscommon for the easy and convenient disposal of their products. It contains 6 baronies, and 56 parishes; and returns 2 members to parliament, both for the county. Principal towns and population in 1831: — Roscommon, 3,306; Boyle, 3,439; Elphin, 1,507. Population of county, in ditto, 249,618.

4. *Leitrim*, a maritime county, is bounded on the south-east by Longford; on the east by Cavan and Fermanagh; on the north by Donegal Bay; and on the west and south-west by Sligo and Roscommon. It contains 420,375 acres, of which 128,167 are mountain and bog, and 25,568 water. This is a very mountainous county; the mountains are not, however, completely barren, but afford sufficient herbage for the breeding of cattle. In the valleys and low grounds there is a good deal of dark soil, incumbent on limestone, and very fertile. Estates very large. Tillage farms small, not exceeding from 5 to 10 acres; and these frequently let in partnership to a number of tenants. Agriculture in a very depressed but perhaps improving state. Potatoes, oats, and flax are the principal crops; clover and turnips unknown, at least to the tenantry. Every man tills according to his fancy or convenience, and "nothing is known of a rotation." The usual course is two successive crops of potatoes, followed by as many of oats as will yield any return. In most cases two and three oat crops are taken, and frequently many more, sometimes to the extent of eleven and even nineteen! — (*Poor Inquiry, Appendix F.*, p. 210.) Cattle improved by the introduction of English breeds; a good deal of butter made. Sheep small, and few in number. Habitations of the people, mostly miserable huts: even the recently erected farm-houses and offices, if so they may be called, are said not to cost more than 10*l.* or 12*l.*! Average rent of land, 10*s.* 7¾*d.* an acre. There are several bleach-fields, some coarse potteries, and some coarse linen is made for home consumption. Leitrim is said to have been at one time covered with wood; but at present it is very destitute of plantations. One of the sources of the Shannon is in this county. It contains 5 baronies, and 17 parishes; and returns 2 members to parliament, both for the county. Principal towns and population in 1831: — Molhill, 1,606; Carrick-on-Shannon, 1,870. Population of county, in ditto, 141,524.

5. *Sligo*, a maritime county, is bounded on the north by the Atlantic Ocean; east, by Leitrim; south-east, by Roscommon; and south-west and west, by Mayo. It contains 434,887 acres, of which 168,711 are mountain and bog, and 8,260 water. This county, though rough, mountainous, and boggy, contains no inconsiderable quantity of very good land; though a good deal of the arable soil is but indifferent.

A few pretty large estates; but a considerable portion of the county is divided into small properties. Lands are let and managed in most respects similarly to those in Leitrim. There has been within these few years a very extraordinary extension of cultivation in Sligo and the contiguous portions of Leitrim. This is evinced by the rapid increase and great amount of the exports from the town of Sligo. In 1831, for example, the export of oats was 130,000 quarters; in 1832, 134,000; and in 1833, it had increased to 154,000. The export of wheat trebled within the three years ending with 1833; but even in the last-mentioned year only 3,127 quarters were exported. The exports of butter and pork are also increasing rapidly and steadily; no fewer than 150,000 casks of the former, and 8,547 barrels of the latter, having been shipped in 1833. — (*Inglis's Ireland in* 1834, vol. ii. p. 12.) It is true that the extension, and even the improvement, of tillage, is not always accompanied in Ireland with any thing like a corresponding improvement in the condition of the occupiers and peasantry; it is difficult, however, to suppose that exportation should be carried to so great an extent without acting favourably on both, and yet such would really seem to be the case. Here, as well as in Leitrim, the *con-acre* system has made much progress within the last 20 years. The competition for land is daily increasing; and the occupier of any overrented patch, that chooses to lease it, never fails to get a considerable sum for the "tenant's right." Average rent of land, 10*s.* 8*d.* an acre. Inhabitants in about the same condition as in Leitrim, or, perhaps, worse. Principal rivers, — Sligo, Arrow, Awinmore, Esky, Moy, &c. It contains 6 baronies, and 39 parishes; and returns 3 members to parliament, being 2 for the county, and 1 for the borough of Sligo. Principal towns and population in 1831: — Sligo, 15,152; Ardnaree, 2,482. Population of county, in ditto, 171,765.

ISLANDS.

A great number of islands and islets lie along the south-west, west, and north-west coasts of Ireland; but there are very few off the east coast. Their distance from the mainland is, in most instances, inconsiderable. The largest of these islands, called Achill, or Eagle Island, from the number of eagles by which it is frequented, is situated on the west coast of Mayo, at the north-west extremity of Clew Bay. It contains about 22,000 acres, with a destitute population of about 4,000. It is mountainous and barren; and is separated from the mainland by a narrow channel, which is, in parts, fordable at low water. Clare Island, the south isles of Arran, at the mouth of Galway Bay, and Valentia Island, on the south side of Dingle Bay, are, after Achill, among the most considerable islands on the west coast. Their inhabitants, and those of the other islands, subsist partly by fishing and partly by agriculture. They use only the Irish language; are barely acquainted with the rudiments of civilisation; and are mostly in a state of extreme poverty. Rachlin Island, off the north coast of Ireland, is principally celebrated for its basaltic columns. — (*Ante*, p. 346.) There are reckoned to be, in all, nearly 200 islands in the seas and bays (principally the latter) round Ireland, of which, from 130 to 140 are inhabited. Their population, which in most instances is very dense, amounts to about 43,000.

PART II.

POPULATION.

SECT. I. *Population of England and Wales.*

Races of Inhabitants. — THERE can be no reasonable doubt that Britain received its first inhabitants from the contiguous shores of the Continent. The best critics are of opinion that the original immigrants were Celts; being denominated *Gael* (Guydels of the Welsh), no doubt from their having passed over from Gaul. At some subsequent period these original immigrants were followed by the Cimbri, or Northern Celts.* It is believed that, after the invasion of the latter, a considerable portion of the Gaelic Celts emigrated to Ireland, where the Gaelic dialect of the Celtic language still predominates. But, however this may be, the Cimbric Celts seem to have obtained a complete ascendancy over their predecessors. Their descendants continue to this day to occupy the principality of Wales, where the Cymraig dialect of the Celtic language, "the genuine daughter of the ancient British spoken in the time of the Romans," is still in common use.† The epoch of the Gothic immigration is not known; but, at a period which must have long preceded the Christian æra, the Goths, who are believed to have emigrated from the countries between the Black Sea and the Caspian, were in possession of the north-western parts of Germany and Gaul as far south as the Seine. That portion of the great Gothic family that settled in the Low Countries and the north of France, were called by the Romans, *Belgæ*, and are represented as a brave and warlike nation. (*Cæsar, De Bello Gallico*, lib. i. § 1.) From Gaul they passed over to Britain, where they occupied, when it was invaded by Julius Cæsar, its south-eastern and most fertile provinces. (*De Bello Gallico*, lib. v. § 12.) The Belgian colonists were, undoubtedly, the principal ancestors of the modern English nation. The Saxons, who invaded England after it had been abandoned by the Romans, were a congenerous race with its Belgic occupants. But the latter, enfeebled by being long subject to the Roman power, seem to have lost that valour for which they were once so conspicuous, and were easily subdued by the Saxons. There is, however, no reason to think that the latter came over in such numbers as to have been able fully to occupy the country, or to have given it a new language, had their own differed materially from that already in use in it.‡ The population of all the eastern, southern, and more level part of the island may, therefore, be looked upon as having been at this period essentially Gothic, and as derived rather from the Belgian than the Saxon Goths.

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* For proofs that the Cimbri were Celts, see Pinkerton's *Dissertation on the Scythians*, annexed to his *Inquiry into the History of Scotland*.

† *Percy's Introduction to the Translation of Mallet's Northern Antiquities*, p. 5. There cannot, as the same learned writer, Pinkerton, and others have shown, be a doubt as to the identity of the ancient Britons and the Celtic Gauls. The French call Wales *Pays de Galles*, that is, country of the Gauls.

‡ *Pinkerton's Geography*, vol. i. p. 20., ed. 1802.

The temporary conquest of England by the Danes, and its subsequent subjugation by the Normans, however important in other respects, made no sensible change in the stock of the inhabitants. The Normans, though long settled in France, where they had acquired the use of the French language, originally emigrated from Norway; and belonged, as well as the Danes, to the Gothic family. Except, therefore, in so far as we may suppose the Celtic and Belgic inhabitants to have been blended together, the Gothic blood would seem to have been preserved pretty pure in all the country to the north and east of the Severn and the Exe.

Within the last few years, however, an immigration has taken place into England, and also into Scotland, that has already had a great, and promises to have a still greater, influence over the blood and character of the people. We allude to the late extraordinary immigration of Irish, or Celtic, labourers into Great Britain. Considering the general want of employment, and the low rate of wages in Ireland, the temptation to emigrate to England is all but irresistible; and steam communication has reduced the expenses of transit to almost nothing; having established, as it were, floating bridges between Dublin and Liverpool, Belfast and Glasgow, Waterford and Bristol. In consequence, very many thousands of destitute Irish labourers have established themselves in Lancashire, Lanarkshire, and other places, principally on the west coast of England and Scotland. So great, indeed, has been this immigration, that at present, it is believed, about a *fourth part* of the population of Manchester and Glasgow consists either of native Irish, or of their descendants; and in various other places the proportion of Irish blood is still greater. Instead of being diminished, this influx, great as it has been, is progressively augmented; and threatens to entail very pernicious consequences on the people of England and Scotland. The wages of the latter are reduced by the competition of the Irish; and, which is still worse, their opinions as to what is necessary for their comfortable and decent subsistence are lowered by the contaminating influence of example, and by familiar intercourse with those who are content to live in filth and misery. It is difficult to see how, if things be allowed to continue on their present footing, the condition of the labouring classes in the two countries should not be pretty much approximated; and there is but too much reason to think that the equalisation will be brought about, rather by the degradation of the English than by the elevation of the Irish. Hitherto the latter have been very little, if at all, improved by their residence in England; but the English and Scotch with whom they associate have been certainly deteriorated. Though painful and difficult, the importance of the subject gives it the strongest claims on the public attention. It were better that measures should be adopted to check, if that be possible, the spread of pauperism in Ireland, and to improve the condition of its inhabitants; but, if this cannot be done, it seems indispensable that we should endeavour to guard against being overrun by a pauper horde.

Having premised these few observations with respect to the races of men by which the kingdom has been peopled, we proceed to an inquiry more germane to statistics, or to investigate the amount of the population.

Progress of Population. — The determination of the population of a country is one of the most important problems that can engage the attention of the statistician. There are various indirect methods by which its amount may be approximated with more or less accuracy; but it cannot be precisely ascertained otherwise than by making a census or enumeration of the inhabitants, under such precautions as may insure its correctness.

This, however, is a measure that cannot be carried into effect except by order of government, which has not always had the power, and has oftener wanted the inclination, to interfere for such purpose. In this country, no census was taken previously to 1801; and our knowledge of the amount of the population at antecedent periods becomes proportionally vague, the further we recede from this recent æra. It has been concluded, from the enumeration in Domesday Book, that there were, at the æra of the Conquest, 300,785 families, or (at 5 individuals to a family) 1,504,925 persons, in England. Wales, however, and the 4 northern counties of Northumberland, Cumberland, Durham, and Lancaster, are excepted from this enumeration. And allowing for these, and other omissions, perhaps the entire population of England and Wales, at the æra in question, may have amounted to 2,150,000, or thereabouts.*

In 1377, a poll tax of 4*d.* was imposed on every lay person, whether male or female, of 14 years of age, mendicants only excepted; and it appears that 1,367,239 † persons paid this assessment, exclusive of those in Wales, Chester, and Durham, which do not appear in the roll. But besides these, there must, no doubt, have been very many omissions in the counties of which we have the assessments; so that it is plain, little or no authentic information, as to the state of the population, can be learned from this document. Mr. Chalmers has, however, concluded that the population of England and Wales was, at the epoch in question, about 2,350,000; and perhaps this is not very wide of the mark; but the data are obviously too loose and unsatisfactory to enable any one to pronounce with any certainty with respect to it. — (*Chalmers's Comparative Estimate*, p. 13., ed. 1802.)

The dreadful pestilence that raged in 1349, is said to have dispeopled England of more than half its inhabitants. This, however, is, most probably, a very exaggerated statement; but if the mortality amounted to a third, it is hardly possible it could have been filled up by the year 1377. No doubt, however, the increase in the rate of wages consequent to the pestilence, and which the Statute of Labourers (passed after the mortality had subsided) vainly attempted to prevent, must have given a considerable stimulus to the principle of increase, and materially augmented the proportion of children to adults; so that it is probable they amounted to considerably more than a third part of the entire population, at which they are estimated by Mr. Chalmers. The small population of several of the great towns, as deduced from this subsidy roll, would seem to show pretty conclusively that, in 1377, the country had not recovered from the pestilence of 1349; and that the population was then under its average amount. London, for example, is said to have contained only 35,000 inhabitants in 1377, Bristol under 10,000, Norwich under 6,000, and so on. These statements seem to be quite inconsistent with the most authentic evidence as to the extent, importance, and wealth of these cities in the 14th century; and there would consequently appear to be little doubt, unless we suppose some great error to have insinuated itself into the subsidy roll, that the cities referred to had not recovered in 1377 from the preceding mortality.—(See *Paper by Mr. Amyot, Archæologia*, vol. xx.)

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* Mr. Turner thinks that the population of England only, at the epoch of the Conquest, exceeded *two* millions. — (*Hist. of Anglo-Saxons*, 5th ed. vol. iii. p. 258.)

† This is the sum obtained by adding together the items on the record: the total stated in it is 1,376,442.

In 1528, commissioners were appointed for taking an account of the stock and grain throughout the kingdom; and fragments of these returns, for certain districts in Wilts, Essex, and Kent, have been preserved, along with a statement of the number of their inhabitants. The districts in question contained, at the above-mentioned epoch, a population of 16,425, while in 1831 the population of the same districts was 52,392. If we suppose this rate of increase to have been uniform throughout the kingdom, the population in 1528 will be found to be 4,356,000. But it is needless to say that no safe inferences can be deduced from facts and inferences of the kind now alluded to.

Harrison and Sir Walter Raleigh state the number of fighting men, in 1575 and 1583, at 1,172,000. But there is no reason to think that this estimate was made with any thing like due care; and unless — of which there is no evidence — it included all the able-bodied individuals between certain specified ages, it affords very slender means from which to deduce the actual amount of population at the time. Perhaps, however, we may infer from it, that the population was not then much above, nor much below, *five* millions. Notwithstanding the influence of the civil wars in the reign of Charles II., there can be little doubt that the population increased considerably during the seventeenth century, particularly in the period between the Restoration and the Revolution; but, unfortunately, we have no means of estimating this increase, nor even of deciding on sure grounds as to the amount of the population at the accession of William III. Previously, indeed, to the Revolution, a hearth tax, proportioned to the number of fireplaces in each, was payable by all houses in the kingdom; and the celebrated political arithmetician, Gregory King, availing himself of the returns obtained under this tax, framed an estimate of the population in 1696, entitled to much more attention than any of those by which it was preceded. King found that the number of houses in the books of the Hearth Office, in 1690, was 1,319, 215. But the hearth duty being charged on the tenant, the divided houses stand in this account as so many separate dwellings; and deducting for these, and for uninhabited houses, smiths' shops, &c., and allowing for the increase in the preceding 6 years, he concluded that there were in England and Wales, in 1696, 1,300,000 inhabited houses; viz., in London and the Bills of Mortality, 105,000; in other cities and market towns, 195,000; and in villages and hamlets, 1,000,000. He then estimates the population per house, and the total population, as follows: —

	Inhabited Houses.	Souls per House.	Number of Souls.
The 97 parishes within the walls - -	13,500	5·4	72,900
The 16 parishes without the walls - -	32,500	4·6	149,500
The 15 out parishes in Middlesex and Surrey - - - - - - -	35,000	4·4	154,000
The 7 parishes in the city and liberty of Westminster - - - -	24,000	4·3	103,200
So London and the Bills of Mortality contain - - - - - - -	105,000	4·57	479,600
The other cities and market towns - -	195,000	4·3	838,500
The villages and hamlets - - - - -	1,000,000	4	4,000,000
In all	1,300,000	4·09	5,318,100

"But considering that the omissions in the said assessments may well be,

In London and the Bills of Mortality -	10 per cent., or	47,960 souls,
In the cities and towns - - -	2 —	16,500 —
In the villages and hamlets - - -	1 —	40,000 —
	In all	104,460,

it follows, that the true number of people, dwelling in the 1,300,000 inhabited houses, should be 5,422,560 souls, being at the rate of 4·17 heads per house." King adds to this 77,440, for soldiers, sailors, vagrants, &c., having no regular domicile; making the entire population in 1696, 5,500,000.

Errors may have crept into this statement, either through inaccuracies in estimating the number of houses, or the number of persons to a house. On the whole, however, we are inclined to think that it comes pretty near the mark; and that it is entitled to as much credit as any estimate can well be, not deduced from actual enumeration.

The hearth tax was abolished at the Revolution. A duty on windows was imposed in 1696; but cottages exempted from the usual taxes to church and poor, being also exempted from the window duties, many of them were left out of the returns made by the collectors of the latter, so that it speedily became next to impossible to construct any probable estimate of the population on the basis assumed by Gregory King. Had the registers of births and deaths been accurately kept, they would have shown satisfactorily whether the population was increasing or diminishing; and its actual amount might have been learned, by observing the ratio which they bore to the population in as many districts of the country as might have been supposed to give a fair average of the whole. But both these registers were very defective; and their results, such as they were, had not been published, and, being dispersed all over the country, were accessible to a few only. Under these circumstances, we need not wonder that the most conflicting statements were put forth as to the amount of the population. Dr. Price, first in his *Treatise on An-*

nuities, and subsequently in a tract published in 1780, contended that the population of England and Wales had been progressively decreasing since the Revolution; and that, at the period when he wrote, it only amounted to 4,763,000! This Essay excited a good

Population of England and Wales, exclusive of Army and Navy, in 1801, 1811, 1821, and 1831; showing its Amount at each Period in each County, with the Ratio of its Increase in each decennial Period; and the Males and Females in each County in 1831.

.. Counties.	1801.	Increase per Cent.	1811.	Increase per Cent.	1821.	Increase per Cent.	1831.		
							Males.	Females.	Total of both Sexes.
England.									
Bedford - -	63,393	11	70,213	19	83,716	14	46,448	49,033	95,483
Berks - - -	109,215	8	118,277	11	131,977	10	72,553	72,836	145,389
Buckingham -	107,444	9	117,650	14	134,068	9	71,734	74,795	146,529
Cambridge - -	89,346	13	101,109	20	121,909	18	72,031	71,924	143,955
Chester - -	191,751	18	227,031	19	270,098	24	164,133	170,258	334,391
Cornwall - -	188,269	15	216,667	19	257,447	17	146,213	154,725	300,938
Cumberland -	117,230	14	133,744	17	156,124	10	81,971	87,710	169,681
Derby - -	161,142	15	185,487	15	213,333	11	117,740	119,430	237,170
Devon - - -	343,001	12	383,308	15	439,040	13	235,789	258,689	494,478
Dorset - -	115,319	8	124,693	16	144,499	10	76,536	82,716	159,252
Durham - -	160,361	11	177,625	17	207,673	22	121,748	132,162	253,910
Essex - -	226,437	11	252,473	15	289,424	10	159,015	158,492	317,507
Gloucester - -	250,809	12	285,514	18	335,843	15	185,118	201,901	387,019
Hereford - -	89,191	5	94,073	10	103,243	7	55,838	55,373	111,211
Hertford - -	97,577	14	111,654	16	129,714	10	71,395	71,946	143,341
Huntingdon -	37,568	12	42,208	15	48,771	9	26,377	26,815	53,192
Kent - - -	307,624	21	373,095	14	426,016	12	234,572	244,583	479,155
Lancaster - -	672,731	23	828,309	27	1,052,859	27	650,389	686,465	1,336,854
Leicester - -	130,081	16	150,419	16	174,571	13	97,556	99,447	197,003
Lincoln - -	208,557	14	237,891	19	283,058	12	158,858	158,607	317,465
Middlesex - -	818,129	17	953,276	20	1,144,531	19	631,410	726,920	1,358,330
Monmouth -	45,582	36	62,127	15	71,833	36	51,095	47,035	98,130
Norfolk . - -	273,371	7	291,999	18	344,368	18	189,323	200,731	390,054
Northampton -	131,757	7	141,353	15	162,483	10	87,949	91,387	179,336
Northumberland	157,101	9	172,161	15	198,965	12	106,147	116,765	222,912
Nottingham -	140,350	16	162,900	15	186,873	20	110,457	114,870	225,327
Oxford - -	109,620	9	119,191	15	136,971	11	76,387	75,769	152,156
Rutland - -	16,356	—	16,380	13	18,487	5	9,721	9,664	19,385
Salop - -	167,639	16	194,298	6	206,153	8	111,017	111,921	222,938
Somerset - -	273,750	12	303,180	17	355,314	13	194,316	219,884	404,200
Southampton -	219,656	12	245,080	15½	283,298	11	152,082	162,198	314,280
Stafford - -	239,153	21	295,153	17	345,895	19	206,921	203,591	410,512
Suffolk - -	210,431	11	234,211	15	270,542	9	145,769	150,548	296,317
Surrey - - -	269,043	20	323,851	23	398,658	22	230,860	255,474	486,334
Sussex - -	159,311	19	190,083	22	233,019	17	135,333	137,007	272,340
Warwick - -	208,190	10	228,735	20	274,392	23	165,576	171,034	336,610
Westmoreland -	41,617	10	45,922	12	51,359	7	27,576	27,465	55,041
Wilts - -	185,107	5	193,828	15	222,157	8	117,622	122,534	240,156
Worcester - .	139,333	15	160,546	15	184,424	15	103,383	107,982	211,365
York (E. Riding)	110,992	16	134,437	14	154,010	10	82,142	86,749	168,891
City of York, &c.	24,393	12	27,304	12	30,451	17	16,510	18,852	35,362
York (N. Riding)	158,225	7	169,391	11	187,452	2	93,203	97,553	190,756
— (W. Riding)	565,282	16	655,042	22	801,274	22	485,812	490,538	976,350
Total - - .	8331,434	14½	9,538,827	17⅞	11,261,437	16	6,376,627	6,714,378	13,091,005
Wales.									
Anglesea - -	33,806	10	37,045	21	45,063	7	23,475	24,850	48,325
Brecon - - -	31,633	19	37,735	16	43,603	10	23,896	23,867	47,763
Cardigan - -	42,956	17	50,260	15	57,784	10	30,868	33,912	64,780
Caermarthen -	67,317	15	77,217	17	90,239	12	48,683	52,057	100,740
Caernarvon -	41,521	19	49,336	17	57,958	15	32,168	34,280	66,448
Denbigh - -	60,352	6	64,240	19	76,511	8	41,618	42,011	83,629
Flint - -	39,622	17	46,518	15	53,784	11	29,924	30,088	60,012
Glamorgan -	71,525	18	85,067	19	101,737	24	63,284	63,328	126,612
Merioneth - -	27,506	4	30,924	11	34,382	3	17,194	18,121	35,815
Montgomery -	47,978	8	51,931	15	59,899	9	33,048	33,434	66,482
Pembroke - -	56,280	7	60,615	22	74,009	9	37,952	43,473	81,425
Radnor - - -	19,050	9	20,900	7	22,459	9	12,453	12,198	24,651
Total - - -	541,546	13	611,788	17	717,438	12	394,563	411,619	806,182
Total of England Wales	8,872,980	14	10,150,615	18	11,978,875	16	6,771,190	7,125,997	13,897,187

deal of attention and controversy. Of the numerous answers which it elicited, those by the Rev. Mr. Howlett*, vicar of Dunmow in Essex, and Mr. Wales †, mathematical master of Christ's Hospital, were by far the best. They showed that the statements on which Dr. Price built his conclusions were most erroneous; and that his reasonings were, besides, illogical and inconclusive. But though a bill for taking a census was introduced into parliament in 1753, the measure was not carried into effect, nor the disputes as to the amount of the population terminated, till 1801. Since then the census has been repeated at three different decennial periods, or in 1811, 1821, and 1831; so that we possess a very satisfactory account of the progress of population in Great Britain during the present century. See previous page for a statement of the Population of England and Wales in 1801, 1811, 1821, and 1831.

Mr. Finlaison, of the National Debt Office, availing himself of the returns as to births, marriages, and deaths obtained under the Population Acts, as well as of various other sources of information, has framed the following statement of the population since 1700, which may be regarded as approaching as near to accuracy as the subject will admit of: —

Population of England and Wales, from the Year 1700 to the Year 1830, including the Army, Navy, and Merchant Seamen.

Years.	Population.	Years.	Population.	Years.	Population.
1700	5,134,516	1750	6,039,684	1800	9,187,176
1710	5,066,337	1760	6,479,730	1810	10,407,556
1720	5,345,351	1770	7,227,586	1820	11,957,565
1730	5,687,993	1780	7,814,827	1830	13,840,751
1740	5,829,705	1790	8,540,738		

It appears from this statement that the population declined during the first 10 years of last century, and that it increased but slowly during the 40 years ending with 1750. In fact, it was not till after that period, or rather till after the peace of Paris in 1763, that England began to take the lead among European powers as a commercial and manufacturing nation. But since then, and especially since the memorable period (1767—1770) when the inventions of Hargraves and Arkwright laid the foundations of the cotton manufacture, our progress in manufactures and commerce, and, consequently, also in wealth and population, has been great beyond all former example.

Density of the Population. — More stress has been laid on the determination of this point than it probably deserves; from its being supposed that, where there is a considerable density of population, the division of labour will be carried to a corresponding extent; and that the competition and judiciously combined efforts of the inhabitants will be productive of a much greater amount of wealth and enjoyments than would fall to the share even of a larger population dispersed over a wider surface. Generally, perhaps, this is true; at least, when any considerable part of the population is collected into great towns. It is hardly possible to suppose that these should exist without there being at once a strong spirit of emulation and competition, and a considerable division and combination of employments amongst the inhabitants, with a consequent developement of industry and an accumulation of wealth. But if large towns be wanting, the results may be materially different. A country divided into small farms, like Ireland, may have a dense population, and be, notwithstanding, very far behind in the arts, and have but a very limited command of comforts and conveniences; while a country divided into large farms, like Scotland, and having a comparatively thin population, may be distinguished for its proficiency in manutures, the extent of its commerce, and the general wellbeing of its inhabitants. It is necessary to keep this distinction in view, as great density of population in a country that is purely or principally agricultural is oftener an evidence of poverty and of backwardness in the arts than of any thing else.

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* *An Examination of Dr. Price's Essay on the Population of England and Wales.* Maidstone, 1781.

† *An Inquiry into the present Population of England and Wales.* Lond. 1781.

The following Table (see next page) embodies all the information obtained under the late census as to the number of inhabited houses, families, and individuals in England and Wales; and we have added to it columns showing the number of acres in each county and in the kingdom, corresponding to each person, family and house, with the number of persons corresponding to each family and house.

Population of Great Towns. — It would have been desirable, had it been possible, to have discriminated between the town and country population, and to have exhibited the amount of each: but the population returns do not afford the means of making any such separation. The population of most towns, as given in the census, is included in that of the parishes in which they are situated; and these are sometimes of great extent, and the country parts of many of them are very populous. But though it had been possible to distinguish between the population belonging to towns and to the country, that would not, as many seem to suppose, afford the means of discriminating between those engaged in agriculture and in other businesses. In most cases, a large proportion of the population of the smaller class of towns — that is, of those having under 6,000 or 7,000 inhabitants — is either directly engaged in some department of husbandry, or in employments intimately connected with it; and this is, indeed, more or less the case with a portion of the inhabitants of almost all towns. On the other hand, however, there are not a few of the smaller class of towns and villages that are almost entirely occupied by manufacturers; so that no accurate inference could be drawn as to the occupations of the inhabitants, even had we been accurately informed as to the numbers resident in towns and villages.

There can be no doubt, however, that a much greater proportion of the population of England and Wales is resident in towns then that of, perhaps, any other country. This is partly a consequence, and partly a cause, of our decided superiority in manufacturing

TABLE showing the Number of Acres in the several Counties of England and Wales, as deduced from their aggregate Measurement, with the Persons, Families, and Inhabited Houses in each, according to the Population Returns of 1831: and showing also the Number of Acres corresponding to each Person, to each Family, and to each House; and the Number of Persons corresponding to each Family and to each House.

Counties.	Acres in each County.	Number, per Population Report of 1831, of			Number of Acres corresponding to			Number of Persons corresponding to	
		Persons.	Families.	Inhabited Houses.	Each Person.	Each Family.	Each House.	Each Family.	Each House.
ENGLAND.									
Bedford - - -	296,320	95,483	20,016	17,978	3·103,379	14·804,157	16·483,367	4·770,334	5·311,102
Berks - - - -	481,280	145,389	31,081	28,032	3·310,291	15·484,701	17·168,949	4·677,745	5·186,537
Bucks - - - -	472,320	146,529	31,849	28,159	3·223,389	14·829,979	16·773,323	4·600,741	5·203,629
Cambridge - - -	548,480	143,955	30,210	26,712	3·810,079	18·155,578	20 533,094	4·765,150	5·389,151
Chester - - -	673,280	334,391	64,955	60,748	2·013,451	10·365,330	11·083,162	5·148,041	5·504,560
Cornwall, exclusive of the Scilly Islands - -	851,200	298,473	59,251	53,000	2·851,849	14·366,002	16·060,377	5·037,434	5·631,566
Cumberland - -	974,720	169,681	34,820	31,017	5·744,426	27·993,107	31·334,326	4·873,090	5·454,753
Derby - - -	657,920	237,170	48,320	46,098	2·774,044	13·615,895	14·272,203	4·908,320	5·144,909
Devon - - -	1,654,400	494,478	101,911	81,999	3·345,750	16·233,772	20·175,856	4·852,057	6·030,293
Dorset - - -	643,840	159,252	33,614	29,307	4·042,901	19·153,924	21·968,813	4·737,669	5·433,923
Durham - - -	702,080	253,910	54,736	40,740	2·765,074	12·826,659	17·233,186	4·638,812	6·232,450
Essex - - - -	981,120	317,507	65,319	57,152	3·090,074	15·020,438	17·166,853	4·860,867	5·555,484
Gloucester - -	805,120	387,019	83,446	71,254	2·080,311	9·648,395	11·299,295	4·637,957	5·431,541
Hereford - - -	552,320	111,211	23,565	21,907	4·966,415	23·438,150	25·212,033	4·719,330	5·076,505
Hertford - -	403,200	143,341	29,250	26,549	2·812,873	13·784,615	15·187,013	4·900,541	5·399,111
Huntingdon - -	238,080	53,192	11,278	9,990	4·475,861	21·110,126	23·831,832	4·716,439	5·324,525
Kent - - -	996,480	479,155	97,142	82,144	2·079,661	10·257,972	12·130,892	4·932,521	5·833,110
Lancaster - - -	1,130,240	1,336,854	260,025	228,130	·845,448	4·346,659	4·954,368	5·141,252	5·860,053
Leicester - -	515,840	197,003	42,142	40,354	2.618,437	12 240,520	12·782,872	4·674,742	4·881,870
Lincoln - - -	1,671,040	317,465	65,903	61,615	5·263,698	25·356,054	27·120,669	4·817,156	5·152,398
Middlesex - -	180,480	1,358,330	314,039	180,493	·132,869	574,706	·999,928	4·325,354	7·525,666
Monmouth - -	317,440	98,130	19,911	18,612	3·234,893	15·942,946	17·055,663	4·928,432	5·272,405
Norfolk - - -	1,295,360	390,054	84,232	74,793	3·320,976	15·378,478	17·319,268	4·630,710	5·215,114
Northampton - -	650,240	179,336	39,163	36,322	3·625,820	16·603,427	17·902,098	4·579,220	4·937,393
Northumberland -	1,197,440	222,912	48,364	35,726	5·371,806	24·758,912	33·517,326	4·609,048	6·239,489
Nottingham - -	535,680	225,327	47,117	44,936	2·377,345	11·369,145	11·920,954	4·782,286	5 014,398
Oxford - - -	483,840	152,156	31,770	29,334	3·179,894	15·229,462	16·494,171	4·789,298	5·187,018
Rutland - - -	95,360	19,385	4,191	3,935	4·919,267	22·753,520	24·233,799	4·625,388	4·926,302
Salop - - -	859,520	222,938	46,427	42,633	3·855,422	18·513,365	20·166,908	4·801,904	5·229,236
Somerset - -	1,052,800	404,200	84,571	71,325	2·604,651	12·448,711	14·760,603	4·779,416	5·667,017
Southampton - -	1,040,000	314,280	64,652	56,526	3·309,151	16·086,123	18·398,615	4·861,103	5·559,919
Stafford - - -	757,760	410,512	83,593	78,049	1·845,890	9·064,874	9·708,773	4·910,842	5·259,670
Suffolk - - -	969,600	296,317	61,533	50,139	3·272,171	15·757,398	19·338,240	4·815,579	5·909,910
Surrey - - -	485,760	486,334	109,077	80,070	·998,820	4·453,368	6·066,692	4·458,630	6·073,860
Sussex - - -	938,240	272,340	52,716	45,505	3·445,105	17·798,011	20·618,393	5·166,173	5·984,837
Warwick - - -	574,080	336,610	72,357	68,253	1·705,475	7·933,994	8·411,059	4·652,072	4·931,798
Westmoreland -	487,680	55,041	10,984	10,353	8·860,304	44·399,126	47·105,187	5·011,016	5·316,430
Wilts - - -	874,880	240,156	51,659	46,281	3·642,965	16·935,674	18·903,654	4·648,870	5·189,084
Worcester - - -	462,720	211,365	45,512	41,646	2·189,199	10·166,989	11·110,791	4·644,160	5·075,277
York — East Riding	716,160	168,891	36,960	32,681	4·240,368	19·376,623	21·913,650	4·569,562	5·167,865
City and Ainstey -	55,040	35,362	7,704	6,404	1·556,473	7·144,353	8·594,628	4·590,083	5·521,861
North Riding -	1,315,200	190,756	40,760	38,116	6·894,672	32·266,929	34 505,195	4·679,956	5 004,617
West Riding -	1,648,640	976,350	198,646	190,484	1·688,575	8·299,387	8·655,005	4·915,025	5·125,627
Totals -	32,243,200	13,088,540	2,744,771	2,325,501					
Add for Scilly Isles		2465	565	521					
Totals per Population Report, 1831 - -		13,091,055	2,745,336	2,326,022					
Average number of acres and persons corresponding to each person, family, and house, in England - - -					2·463,468	11·747,136	13·865,055	4·768,536	5·628,266
WALES.									
Anglesea - -	173,440	48,325	10,128	9,683	3·589,033	17·124,803	17·911,804	4·771,143	4·990,705
Brecon - - -	482,560	47,763	9,848	9,373	10·103,218	49·000,812	51·484,050	4·850,020	5·095,807
Cardigan - -	432,000	64,780	13,652	13,045	6·668,725	31·643,715	33·116,136	4·745,092	4·965,887
Caermarthen - -	623,360	100,740	20,719	18,920	6·187,810	30·086,394	32·947,146	4·862,204	5·324,524
Caenarvon - -	348,160	66,448	14,553	13,221	5·239,586	23·923,590	26·333,863	4·565,931	5·025,944
Denbigh - - -	405,120	83,629	17,150	16,368	4·844,253	23·622,157	24·750,733	4·876,327	5·109,299
Flint - - -	156,160	60,012	12,138	11,716	2·602,146	12·865,381	13 328,781	4·944,142	5·122,226
Glamorgan - -	506,880	126,612	26,111	23,843	4·003,412	19·412,508	21·259,070	4·848,991	5·310,238
Merioneth - -	424,320	35,315	7,358	6,968	12·015,291	57·667,845	60·895,522	4·799,538	5 068,169
Montgomery - -	536,960	66,482	13,407	12,169	8·076,773	40·050,720	44·125,236	4·958,753	5·463,226
Pembroke - -	390,400	81,425	16,595	15,779	4·794,596	23·525,158	24·741,745	4·906,598	5·160,340
Radnor - - -	272,640	24,651	4,879	4,437	11·059,998	55·880,303	61·446,924	5·052,470	5·555,781
Totals -	4,752,000	806,182	166,538	155,522					
Average number of acres and persons corresponding to each person, family, and house, in Wales - -					5·894,45	28·534,028	30·555,162	4·840,829	5·183,716
Ditto in England and Wales - - - - - -					2·662,536	12·708,410	14·911,268	4·772,671	5·600,4

industry; and it is partly owing to our improved communications by canals, railroads, and otherwise, which enable the inhabitants of towns to obtain most sorts of raw products nearly as cheap as if they lived in the country. The subjoined Table, constructed from the Parliamentary Returns, exhibits the population of the principal cities and towns of England and Wales in 1811, 1821, and 1831; showing the ratio of their increase in each decennial period, with the number of inhabited houses in each, and the number of persons to a house in 1831. It discovers an astonishing increase, particularly in the manufacturing districts.

Population of the principal Towns of England and Wales in 1811, 1821, and 1831, showing the Ratio of their Increase in each decennial Period, with the Number of Inhabited Houses in 1831, and the Number of Persons to a House.

Towns.	Population, 1811.	Increase per Cent.	Population, 1821.	Increase per Cent.	Population, 1831.	Inhabited Houses, 1831.	Inhabitants to a House, 1831.
London, including Westminster, Southwark, &c.	1,050,000	21·409	1,274,800	15·464	1,476,646	196,666	7·508,394
Manchester and Salford *	98,573	45·869	133,788	36·643	182,812	29,651	6·165,458
Liverpool	94,376	26·061	118,972	38·835	165,175	25,732	6·419,050
Birmingham *	85,753	12·791	106,722	37·728	146,986	29,656	4·956,366
Leeds * †	62,534	34·	83,796	47·254	123,393	25,456	4·847,305
Plymouth	56,060	9·19	61,212	23·397	75,534	7,842	9·631,981
Norwich	37,256	34·979	50,288	21·531	61,116	13,156	4·645,484
Bristol and suburbs	76,433	25·283	95,758	22·2	117,016	18,487	6·329,637
Sheffield	35,840	17·625	42,157	39·979	59,011	12,144	4·859,272
Nottingham	34,253	17·989	40,415	25·398	50,680	10,407	4·869,799
Portsmouth and Portsea	40,567	12·524	45,648	10·386	50,389	9,410	5·354,836
Newcastle on Tyne	27,587	27·527	35,181	21·542	42,760	5,048	8·470,681
Sunderland	12,289	19·822	14,725	15·857	17,060	1,744	9·782,110
Leicester *	23,146	30·152	30,125	29·141	38,904	8,348	4·660,277
Bath	31,496	16·875	36,811	3·401	38,063	5,063	7·517,874
Preston	17,065	59·976	27,300	21·29	33,112	6,184	5·354,463
Hull and Sculcoates	26,792	17·292	31,425	47·735	46,426	8,726	5·320,421
Brighton	12,012	103·371	24,429	66·335	40,634	7,798	5·210,823
Blackburn *	15,083	45·461	21,940	23·477	27,091	4,594	5·897,039
Bolton	24,149	29·591	31,295	31·634	41,195	7,124	5·782,551
Coventry	17,923	18·518	21,242	27·436	27,070	5,444	4·972,446
Stockport	17,545	23·83	21,726	17·228	25,469	4,973	5·121,455
York	18,217	14·107	20,787	26·328	26,260	4,586	5·726,122
Greenwich	16,947	22.216	20,712	18·544	24,553	3,665	6·699,317
Derby	13,043	33·581	17,423	35·608	23,627	4,842	4·879,595
Macclesfield	12,999	36·518	17,746	30·333	23,129	4,543	5·091,129
Chester	16,140	23·6	19,949	6·992	21,344	4,096	5·210,937
Dudley *	13,925	30·779	18,211	26·533	23,043	4,326	5·326,629
Shrewsbury *	16,606	19·559	19,854	7·268	21,297	4,057	5·249,445
Yarmouth	17,977	·35	18,040	17·045	21,115	4,570	4·620,350
Cambridge	11,108	27·313	14,142	47·906	20,917	4,007	5·220,114
Wigan	14,060	26·002	17,716	17·261	20,774	3,870	5·367,958
Ipswich *	13,670	25·72	17,186	17·543	20,201	4,116	4·907,920
Oxford	12,931	26·548	16,364	26·185	20,649	3,426	6·027,145
Carlisle *	12,531	23·501	15,476	29·271	20,006	2,696	7·420,623
Deptford	19,833	·146	19,862	—	19,795	4,386	4·513,224
Dover	9,128	13·135	10,327	15·444	11,922	2,095	5·690,692
Southampton	9,617	38·847	13,353	44·716	19,324	3,189	6·059,579
Huddersfield *	9,671	37·359	13,284	43·292	19,035	3,612	5·269,983
Merthyr Tydvil *	15,720	10·712	17,404	26·884	22,083	4,485	4·923,745
Worcester	13,668	30·516	17,839	4·322	18,610	3,568	5·215,807
Woolwich	17,054	—	17,008	3·839	17,661	2,672	6·609,655
Colchester	12,544	11·734	14,016	15·346	16,167	3,216	5·027,052
Wolverhampton *	14,836	23·887	18,380	34·559	24,732	4,901	5·046,317
Warrington	11,738	15·607	13,570	18·039	16,018	3,061	5·232,930
Reading	10,788	19·271	12,867	21·201	15,595	3,081	5 061,668
Cheltenham *	8,325	60·912	13,396	71·26	22,942	4,013	5·716,920
Halifax	9,159	37·875	12,628	21·808	15,382	3,244	4·741,676
Toxteth Park	5,864	118·775	12,829	87·598	24,067	3,814	6·310,173
Northampton	8,343	29·366	10,793	42·231	15,351	3,091	4·966,353

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* The entire parish of Manchester contains 270,963 inhabitants, and 34,260 acres. All the towns marked * have considerable country districts attached to them.

† The town and liberty of Leeds extends over 21,450 acres.

Population Table (*continued*).

Towns.	Population, 1811.	Increase per Cent.	Population, 1821.	Increase per Cent.	Population, 1831.	Inhabited Houses, 1831.	Inhabitants to a House, 1831.
Canterbury - - -	10,200	24·951	12,745	7·093	13,649	2,661	5·129,274
Bury * - - -	8,762	20·782	10,583	42·549	15,086	2,743	5·499,817
Boston * - - -	8,180	26·809	10,373	8·358	11,240	2,437	4·612,228
Chatham - - -	12,652	16·614	14,754	21·567	17,936	2,840*	6·315,492
Kidderminster - - -	8,038	33·229	10,709	39·884	14,981	2,768	5·412,210
Rochdale * - - -	22,036	26·148	27,798	28·656	35,764	6,611	5·409,771
Bradford - - -	7,767	68·2	13,064	77·768	23,223	4,044	5·742,581
Swansea - - - -	8,196	37·091	11,226	21·876	13,694	2,661	5·146,185
Whitehaven - - -	10,106	23·075	12,438	——	11,393	2,220	5·131,981
Frome * - - - -	9,493	30·738	12,411	——	12,240	2,346	5·217,391
King's Lynn * - -	10,259	19·436	12,253	9·116	13,370	2,707	4·939,046
Exeter - - -	18,896	24·253	23,479	20·286	28,242	4,056	6.962,017
Ashton-under-Lyne * -	19,052	36·295	25,967	29·383	33,597	5,960	5·637,080
Lincoln * - - -	8,861	16·995	10,367	14·237	11,843	2,417	4·899,875
Gateshead * - -	8,782	33·99	11,767	28·979	15,177	2,317	6·550,280
Durham - - -	6,763	45·231	9,822	3·186	10,135	1,288	7·868,788
Gloucester - - -	8,280	18·043	9,774	22·089	11,933	2,069	5·767,520
Rochester - - -	9,070	2·635	9,309	6·252	9,891	1,738	5·691,024
Lancaster - - -	9,247	9·7	10,144	24·389	12,618	1,975	9·886,329
Bilston * - - -	9,646	24·435	12,003	19·903	14,492	2,744	5·281,341
Wakefield - -	8,593	35·264	10,764	13·638	12,232	2,486	4·920,353
N. Shields and Tynemouth -	13,533	30·488	17,659	——	16,926†	2,542	6·658,536
South Shields - -	9,001	——	8,885	2·127	9,074	1,353	6·706,577
Maidstone * - - -	9,443	32·457	12,508	23·017	15,387	2,844	5·410,337
Oldham * - - -	16,690	29·79	21,662	49·483	32,381	5,950	5·442,184
Chelsea - - -	18,262	47·01	26,860	20·517	32,371	4,635	6·984,034
Kingswinford * ‡ - -	8,267	33·325	11,022	37·506	15,156	2,808	5·397,435
Saddleworth * § - -	12,579	10·517	13,902	14·99	15,986	2,612	6·120,210
Hereford * - - -	7,306	24·418	9,090	13·113	10,282	2,069	4·969,550
Loughborough * - -	5,400	36·39	7,365	49·355	10,800	2,146	5·032,618
Sedgeley * - - -	13,397	28·349	17,195	19·668	20,577	3,770	5.458,090
Taunton * - -	6,997	21·966	8,534	30·524	11,139	2,024	5·503,458
Burslem - - -	8,625	12·452	9,699	15·991	11,250	2,731	4·119,370
Kendal - - -	7,505	19·706	8,984	11·475	10,015	2,092	4·787,274
Trowbridge - - -	6,075	57·168	9,548	12·725	10,863	2,105	5·160,570
Doncaster - - -	6,935	23.201	8,544	26·416	10,801	2,291	4·714,535
Tipton * - - -	8,407	37·337	11,546	29·49	14,951	2,767	5·403,324
Salisbury - - -	8,243	6·308	8,763	12·701	9,876	1,871	5·278,995
Sums -	2,652,718		3,294,443		4,048,002	656,579	
The average Rate of Increase, and of the Number of Inhabitants to a House, being - - - -		24·191		22·878			6·165,293

It appears from this statement that nearly a third part of the population of England and Wales resided, in 1831, in towns, having a population of about 10,000 and upwards. It appears, too, that while, during the 10 years ending with 1830, the entire population increased at the rate of 16 per cent., that of the great towns increased at the rate of nearly 23 per cent. But, if we compare the population of 1821 with that of 1831, deducting the population of the great towns, as given above, at each of these periods, the ratio of the increase of the rural population, including the smaller class of towns, will be found to be under 13½ per cent., or about 9½ per cent. under the increase of the great towns.

It appears, too, from this and the previous table, that in England and Wales generally there are 5·6 individuals to a house; while in the great towns there are 6·165, or 6·2 nearly. Plymouth, Sunderland, and Newcastle-on-Tyne have the greatest number of individuals to a house. In London the number is nearly 7½ to one, or 15 individuals to every 2 houses.

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* Of the population of Chatham, 945 in hulks.

† The apparent falling off in the amount of population is principally ascribable to the exclusion of seamen from the returns in 1831 that were mentioned in those of 1821.

‡ The parish of Kingswinford contains 7,130 acres.

§ The chapelry of Saddleworth contains 18,280 acres.

Proportion of Males and Females. — It appears from the experience of all countries in which correct censuses of the population have been taken, that there is uniformly a small excess in the number of male over that of female births; the one being to the other generally as 16 to 15, or as 22 to 21, or some nearly similar proportion. It appears from the following Table (p. 410) that, during the 10 years ending with 1830, there were registered of male births 1,917,444, and of female births 1,836,049; the former being to the latter nearly in the ratio of 19 to 18. We believe, however, that the excess of male over female births is not really quite so great as it appears to be from this table; inasmuch as more care is usually supposed to be taken in the registration of male than of female births. But the error thence arising cannot be material.

But, notwithstanding this excess of male births, it is found that, owing to the greater risks and casualties to which men are exposed in the military and naval service, and otherwise, their greater emigration, &c., there is, in almost all old settled countries, a larger amount of female than of male population. Thus, in 1831, there were in Great Britain, including the army and navy, 8,163,023 males, and 8,376,295 females, — showing an excess on the part of the latter of 213,272.

Proportion of Births, Marriages, and Deaths to the Population. — It is of importance, not only with a view to statistical inquiries, but in reference also to the civil rights of individuals, which may be seriously affected by the want of such information, that all births, marriages, and deaths should be entered in public registers. But here, as in most other countries, the register of these events was, until very recently, far from being either complete or accurate. A good deal was left to the discretion of the parties; and while this is the case, it were idle to expect completeness in the registers. The clergy were required, so far back as 1538, to keep a register of every marriage, christening, and burial within their respective parishes; and in 1603 the injunction was renewed, and a form prescribed in which the register should be kept. In 1822, an Act was passed for the better regulating and preserving parish and other registers; and through its influence the register of baptisms has been a good deal improved. But the vice of the old system of registration was, that being too much connected with the church it was looked upon rather as a sort of religious ceremony than as a civil act; and was in this way rendered an object of jealousy and aversion to most classes of dissenters. But though the registers had been in other respects as complete as they were defective, their diffusion would have deprived them of a large portion of their utility; for being distributed in immense numbers all over the country, it often became a matter of extreme difficulty to learn in which register certain facts were specified. Hence the obvious importance, not merely that births, marriages, and deaths should be recorded, but also that the records of the events should be brought together into a safe place of deposit, where they may be easily accessible to any one wishing to consult them.

The register of baptisms has been the most defective of any. Many dissenters who bury in the cemeteries of the established church baptize after their own manner; so that though their deaths appear in the register, their births do not. In large towns, the rite of baptism is not unfrequently neglected altogether; so that the registers in very many places are so inaccurate as not to afford any materials on which reliance can be placed. The total number of deaths in England and Wales, during the 10 years ending with 1830, are believed to have amounted to 2,657,797; and, to balance these deaths, and to provide for the increase of population that took place in that period, the births must have been 4,636,672. But, according to the register, the births during these 10 years were only 3,753,493, — being 883,179, or about 24 per cent. below what they ought to have been! — (*Preliminary Remarks to Census of* 1831, p. 45.)

The proportion of registered baptisms to the population, during the 5 years ending with 1830, appears to have been as 1 to 33. The total number registered in 1830 was 382,000, of which 20,039, or 1 in 19, were illegitimate.

Till 1754, the marriage register was worth very little; but the Act of the 26 Geo. 2., for the better prevention of clandestine marriages, having come into operation that year, the register has been since nearly correct. The Act in question made the registration of marriages indispensable to their validity. In the northern counties it has been evaded to some extent, by marrying in Scotland; and the Quakers and Jews marry according to their own forms, and in their own congregations. But the deficiency thence arising is inconsiderable, and does not affect the comparative amount of marriages in different years. During the 5 years ending with 1830, the proportion of marriages to the population was as 1 to 128.

This proportion is, however, liable to be seriously affected by the prosperous or unprosperous condition of the people at the time; and consequently, therefore, by variations in the price of the principal article of subsistence. Thus, the average price of wheat in 1798 and 1769 was 2*l.* 18*s.* 10½*d.* a quarter, and the average annual number of marriages during the same 2 years was 78,527: but during 1800 and 1801, the average price of wheat rose to 5*l.* 15*s.* 11*d.*, while the annual average number of marriages was reduced to 68,539, — being a decline of very nearly 10,000 a year! In 1802 and 1803, prices fell off to near their old level, and the annual average number of marriages in these years, increased, of course, by deferred engagements, rose to 92,387, — being an excess of 23,848 a year above what they had been during the scarcity, and of 13,860 a year above their amount during the preceding biennial period! The comparative number of births and burials, especially the latter, is also materially influenced by the same cause.

It must, however, be observed that these effects depend entirely, or almost entirely, on the *suddenness* of the rise or fall of prices. A series of years of high prices may not be, and most frequently indeed is not, accompanied by an increased number of deaths and a diminished number of marriages, nor a series of years of low prices by a diminished number of deaths and an increased number of marriages. In such cases the rate of wages is, in some measure, accommodated to the state of prices: so that their absolute magnitude, provided it be pretty constant, has, in general, comparatively little influence. But such is seldom or never the case with sudden and considerable variations of prices; and, unless modified by some countervailing circumstances, they hardly ever fail of having a powerful and marked influence.

The average fruitfulness of marriages depends on a variety of circumstances, such as the age of the parties when they are contracted*, the prosperous or unprosperous condition of the country, and so on. During the 10 years ending with 1830, there were, in England and Wales, 1,052,095 registered marriages, and 3,753,493 registered baptisms; being at the rate of 356† baptisms to each 100 marriages. But, as already seen, while the register of marriages has been nearly accurate, 24 per cent. must be added to the registered baptisms to get the true amount of births; so that, on this hypothesis, there would be 441 births to each 100 marriages. This, however, is too much, seeing that it includes the illegitimate births; and, allowing for them, there will be found to have been about 420 births to each 100 marriages, or 4·2 births to each marriage, at an average of the 10 years ending with 1830. And we incline to think, that those who suppose this to represent the mean fruitfulness of a marriage in England in ordinary periods will be very near the mark.

The register of burials is believed to have been more accurate than that of births, but much less so than that of marriages. Many congregations of Dissenters have their own burying ground, the interments in which have not appeared in the registers; and this, also, is the case with Roman Catholics and Jews resident in London and some other places. There are also some persons, who, from motives of economy, or otherwise, inter without any religious ceremony. And, exclusive of these, and other causes of omission, many persons are lost at sea, or die abroad, of whose demise no account is kept. During the 5 years ending with 1830, the average rate of mortality in England, exclusive of Wales, was, according to the register, 1 in 51; the meaning of this being, that 1 out of every 51 persons existing in the kingdom died annually. The extremes vary from 1 in 41 in Middlesex, to 1 in 64 in Cornwall. According to the returns, the mortality in Monmouthshire is only 1 in 69; but the registers for that county are so obviously inaccurate, that no dependence can be placed on them.

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* There seem to be good grounds for thinking that, at an average, births are more frequent among females married at from 27 to 30, than among those married at from 17 to 18 or 19 years of age. — *Report of* 1825 *on Friendly Societies*, p. 90.) But this certainly gives no countenance to the extraordinary opinion that "whatever the period of marriage is, the number of children reared is not in the least affected thereby!" — (*Ibid. in loc. cit.*) A notion of this sort is too obviously absurd to deserve notice.

† It is said, in the Preliminary Remarks to the Census of 1831 (p. 45.) to be 346; but this is plainly an error.

TABLE showing the Number of Marriages in each Year from 1754 to 1800, with the Average Number of Marriages for every *Five* and every *Ten* Years since 1754.

Number of registered Marriages in each Year from 1755 to 1800.						Periods.	Medium Average of Five Years.	Medium Average of Ten Years.
Years.	Marriages.	Years.	Marriages.	Years.	Marriages.			
1755	49,379	1771	60,612	1786	68,992	1755—1760	52,666	56,275
1756	50,972	1772	60,337	1787	76,448	1761—1765	59,883	
1757	48,300	1773	59,769	1788	70,032	1766—1770	59,043	59,892
1758	50,672	1774	60,512	1789	70,696	1771—1775	60,741	
1759	55,537	1775	62,473	1790	70,648	1776—1780	64,238	64,479
1760	57,848	1776	65,462	1791	72,590	1781—1785	66,722	
1761	58,101	1777	65,020	1792	74,919	1786—1790	71,363	71,784
1762	56,543	1778	62,727	1793	72,880	1791—1795	72,205	
1763	62,283	1779	63,671	1794	71,797	1796—1800	74,998	79,231
1764	63,310	1780	64,309	1795	68,839	1801—1805	83,465	
1765	59,227	1781	63,768	1796	73,107	1806—1810	82,953	85,985
1766	57,043	1782	63,071	1797	74,997	1811—1815	89,012	
1767	55,324	1783	66,287	1798	79,477	1816—1820	93,073	100,064
1768	58,331	1784	68,935	1799	77,557	1821—1825	103,363	
1769	61,825	1785	71,509	1800	69,851	1826—1830	107,056	
1770	62,693							

Totals of Registered Baptisms, Burials, and Marriages in England and Wales, with the Average Prices of Wheat in each Year, from 1801 to 1830, both inclusive.

Year.	Baptisms.			Burials.			Marriages.	Price of Wheat per Quarter.
	Males.	Females.	Total.	Males.	Females.	Total.		£ s. d.
1801	120,521	116,508	237,029	101,352	103,082	204,434	67,288	3 18 3
1802	139,889	133,948	273,837	99,504	100,385	199,889	90,396	3 7 5
1803	150,220	143,888	294,108	102,459	101,269	203,728	94,379	2 16 6
1804	150,583	144,009	294,592	91,538	89,639	181,177	85,738	3 0 1
1805	149,333	142,868	292,201	91,086	90,154	181,240	79,586	4 7 10
1806	147,376	144,553	291,929	92,289	91,163	183,452	80,754	3 19 0
1807	153,787	146,507	300,294	97,996	97,855	195,851	83,923	3 13 3
1808	151,565	144,509	296,074	102,614	98,149	200,763	82,248	3 19 0
1809	152,812	147,177	299,989	97,894	93,577	191,471	83,369	4 15 7
1810	152,591	146,262	298,853	104,907	103,277	208,184	84,470	5 6 2
Totals	1,468,677	1,410,229	2,878,906	981,639	968,550	1,950,189	832,151	
1811	155,671	149,186	304,857	94,971	93,572	188,543	86,389	4 14 6
1812	153,949	148,005	301,954	95,957	94,445	190,402	82,066	6 5 5
1813	160,685	153,747	314,432	93,726	92,751	186,477	83,860	5 8 9
1814	163,282	155,524	318,806	103,525	102,878	206,403	92,804	3 14 0
1815	176,233	168,698	344,931	99,442	97,966	197,408	99,944	3 4 4
1816	168,801	161,398	330,199	103,954	102,005	205,959	91,946	3 15 10
1817	169,337	162,246	331,583	101,040	98,229	199,269	88,234	4 14 9
1818	169,181	162,203	331,384	107,724	105,900	213,624	92,779	4 4 1
1819	171,107	162,154	333,261	106,749	106,815	213,564	95,571	3 13 0
1820	176,311	167,349	343,660	104,329	104,020	208,349	96,833	3 7 11*
Totals	1,664,557	1,590,510	3,255,067	1,011,417	998,581	2,009,998	910,426	
1821	181,811	173,496	355,307	107,482	104,870	212,352	100,868	2 16 2
1822	190,508	182,063	372,571	111,299	109,116	220,415	98,878	2 4 7
1823	189,144	180,616	369,760	119,649	117,737	237,386	101,918	2 13 5
1824	189,401	182,043	371,444	124,027	120,047	244,074	104,723	3 4 0
1825	192,003	183,050	375,053	129,727	125,291	255,018	110,428	3 8 7
1826	194,527	185,886	380,413	136,100	132,061	268,161	104,941	2 18 9
1827	191,428	182,758	374,186	128,991	122,880	251,871	107,130	2 16 9
1828	200,333	192,121	392,454	130,015	125,318	255,333	111,174	3 0 5
1829	194,089	186,156	380,245	134,525	129,705	264,230	104,316	3 6 3
1830	194,200	187,860	382,060	129,290	124,777	254,067	107,719	3 4 3
Totals	1,917,444	1,836,049	3,753,493	1,251,105	1,211,802	2,462,907	1,052,095	

Account of Registered Burials from 1780 to 1800.

Years.	Registered Burials.	Years.	Registered Burials.	Years.	Registered Burials.	Years.	Registered Burials.
1780	198,348	1785	191,866	1790	184,894	1795	210,339
1781	195,902	1786	185,232	1791	186,674	1796	190,897
1782	187,152	1787	184,881	1792	188,906	1797	191,306
1783	188,264	1788	187,598	1793	203,653	1798	187,531
1784	194,401	1789	185,570	1794	197,740	1799	189,586
						1800	208,063

* Down to this year prices are estimated by the Winchester bushel; but from this year inclusive they are estimated by the Imperial bushel, which is about one thirty-second part larger than the other.

Corrected Table of the Annual Proportions of Baptisms, Burials, and Marriages, to the Population of England; calculated upon an Average of the Totals of such Baptisms, Burials, and Marriages, in the Five Years preceding the several Enumerations of 1801, 1811, 1821, and 1831; and distinguishing the several Counties.

Counties.	1796—1800.			1806—1810.			1816—1820.			1826—1830.		
	Baptisms.	Burials.	Marriages.	Baptisms.	Burials.	Marriages.	Baptisms.	Burials.	Marriages.	Baptisms.	Burials.	Marriages.
Bedford - - - - -	35	51	114	32	48	131	33	57	123	35	54	129
Berks - - - - -	34	51	148	33	53	144	33	54	140	32	52	149
Bucks - - - - -	37	50	129	32	49	129	33	53	139	34	52	140
Cambridge - - -	33	45	118	30	30	131	30	55	117	31	45	123
Chester - - - - -	39	51	130	32	49	132	34	52	127	37	52	139
Cornwall - - - - -	33	58	120	31	62	142	32	69	146	33	64	147
Cumberland - - -	38	54	145	34	52	132	32	54	151	32	54	163
Derby - - - - -	35	52	138	32	58	138	34	59	146	35	54	135
Devon - - - - -	36	49	109	32	50	113	32	59	132	35	58	132
Dorset - - - - -	41	62	142	34	56	139	34	63	144	35	58	140
Durham - - - -	38	43	116	32	49	131	32	53	134	32	52	138
Essex - - - - -	35	44	126	32	45	130	34	58	146	35	52	154
Gloucester - - - - -	37	55	127	35	61	120	35	60	111	35	61	117
Hereford - - - - -	40	65	183	35	60	144	36	60	170	37	57	152
Hertford - - -	38	54	161	33	57	168	33	58	171	36	56	175
Huntingdon - - -	33	46	104	32	49	134	33	61	127	34	46	131
Kent - - - - -	30	41	116	28	38	115	30	50	130	33	49	143
Lancaster - - - -	34	47	114	28	49	115	31	51	116	34	46	115
Leicester - - - -	35	49	130	36	58	134	34	56	126	36	53	127
Lincoln - - - -	32	50	117	30	49	125	31	59	134	32	51	134
Middlesex - - -	39	37	95	39	36	94	36	45	101	31	41	108
Monmouth - - -	56	72	169	45	64	146	46	66	148	45	69	131
Norfolk - - - - -	32	47	126	31	50	135	31	59	129	32	52	139
Northampton - - -	42	51	130	35	53	132	34	55	129	35	50	135
Northumberland - -	47	57	139	35	54	160	37	57	139	36	52	134
Nottingham - - -	32	51	116	32	52	119	32	54	124	31	51	122
Oxford - - - -	35	53	139	33	56	141	33	57	148	32	53	141
Rutland - - - - -	33	50	131	33	54	161	34	62	143	33	52	137
Salop - - - - -	34	54	142	34	59	142	34	54	148	35	53	140
Somerset - - - - -	39	55	139	34	53	128	35	61	140	35	58	147
Southampton - - -	34	46	104	30	46	102	31	61	128	34	56	131
Stafford - - - -	34	49	124	31	52	118	31	51	128	32	51	126
Suffolk - - - - -	34	56	129	31	54	132	33	65	134	35	59	137
Surrey - - - - -	37	42	134	35	44	129	38	49	139	38	49	129
Sussex - - - - -	31	55	126	28	52	128	32	68	142	33	58	142
Warwick - - - -	35	52	116	34	43	119	35	48	118	34	58	120
Westmoreland - -	35	50	142	31	53	137	33	52	149	32	56	152
Wilts - - - - -	41	60	142	34	57	138	35	63	134	35	57	148
Worcester - - - -	34	46	137	31	51	129	33	53	140	31	51	127
York—East Riding } City and Ainsty } -	39	55	129	29	48	108	33	54	122 {	35	51	118
										36	52	113
North Riding - -	36	53	142	30	51	124	34	61	147	33	55	144
West Riding - -	35	49	124	31	51	123	33	57	124	35	51	131
Summary of England, not including Wales - - }	36	48	123	32	49	121	33	55	127	34	51	128

New System of Registration.—The previous statements have sufficiently evinced the defects of the old system of registration, and the necessity that existed of having it superseded by a better; and this, we are glad to say, has been accomplished by the Act 6 and 7 Will. 4. cap. 86. This Act, passed in pursuance of the recommendation of a committee of the House of Commons on parochial registers (1833), embodies a plan for the effectual registration of births, deaths, and marriages in England and Wales. To give uniformity to the system, it is conducted under the superintendence of an officer resident in London; and there also a central place of deposit is provided for certified copies of all parochial registers, with ready means of finding any entry in them. It is provided that in every case of *birth* the following circumstances shall be recorded; viz. the time and place of birth; the name (if any) and sex of child; name and surname of father; name and maiden surname of mother; rank or profession of father; the signature, description, and residence of the informant; and also the baptismal name of child, if added after registration of birth. In every case of *death* the register is to record the time and place of death; the name and surname, sex, age, and rank or profession of the deceased; *the cause of death;* and the signature, description, and residence of the informant. In all cases the entries must be signed by the informant, and also by the registrar, who discharges this duty without any immediate expense to the parties requiring registration, his remuneration being derived from moderate fees paid out of the poor's rates. The insertion of the cause of death, along with the period of death, and the residence, sex, age, and occupation of the deceased, will, in time, afford data of the utmost importance to medical science, and to the improvement of vital statistics.

The central office in London for the deposit of certified copies of registers, and the general supervision and conduct of the business of registration, is called the General Register Office. It is presided over by a registrar-general appointed under the great seal, having under him an assistant registrar, chief clerk, and a numerous body of subordinate clerks. From this office communications emanate to all superintending registrars, registrars of births and deaths, and registrars of marriages, who all act within their respective districts, under the directions of the registrar general, in whom is vested the power of dismissal.

There are at present (June, 1838) 619 superintendent registrars, who may each appoint a deputy, with the approval of the registrar-general. Of these superintendents 562 have accepted the office as clerks of boards of guardians for the poor, or have been appointed by the guardians, and 57 have been appointed by the registrar-general. Each superintendent registrar serves within the district to which he is appointed, which comprises one or more registrar's districts.

There are 2,197 registrars of births and deaths, who may each appoint a deputy, with the approval of the guardians, or of the poor law commissioners. Of these registrars, 1,981 have been appointed by the boards of guardians established under the Poor Law Amendment Act; and 216 are registrars of temporary districts, appointed by the poor law commissioners. Each registrar is appointed to some one of the 2,197 registrars' districts, into which the whole of England and Wales has been divided; and he must reside in that district, and register *all* births and deaths that occur in it.

Marriages are registered, 1st, By clergymen of the established church, of whom 11,694 have been furnished with books for this purpose. 2dly, By registrars of marriages, of whom there were, on 1st January, 1838, 716: these last are appointed by the superintendent registrars, and register marriages solemnized in their presence in registered places of worship, or in the superintendent registrar's office; 297 of the total number of 716 are also registrars of births and deaths. 3dly, By the registering officers of Quakers, of whom there are 90; and 4thly, By the secretaries of synagogues, of whom there are 36.

The clergymen, and the various officers, amounting in all to about 14,400, to whom the business of registration is committed, are bound to make quarterly deliveries of *certified copies* of all entries in their respective registers during the previous quarter to the superintendent registrars of the district to which they respectively belong; and these certified copies are transmitted by the superintendent registrars to the registrar-general. The certified copies are made on separate leaves of paper of a uniform size and peculiar texture, having a distinguishing water-mark. On being received at the general register office in London (whither they are sent by post), they are carefully examined; and any defects being noted, are made the subject of communication with the person from whom the defective copy came, who is required either to furnish another copy, or a satisfactory explanation. They are then arranged, paged, and inserted in books for reference.

Alphabetical indexes of births, deaths, and marriages will be prepared and kept in the general register office; and any person, on payment of 1*s*., may search these indexes for any entry, and, on finding it, may, if he wish, obtain, for 2*s*. 6*d*., a stamped copy of such entry, which will be "received as evidence of the birth, death, or marriage to which the same relates, without any further or other proof of such entry." There will be separate alphabetical indexes for the births, the deaths, and the marriages in each quarter; and the twelve indexes, comprising references to the registrations of one year, will probably contain not less than a million of names. The registrar-general is bound to furnish, once a year, one of the principal secretaries of state with a *general abstract account* of the births, deaths, and marriages registered during the foregoing year, to be laid before parliament. The first of these abstracts will be prepared towards the close of the present year (1838), and will comprise the births, deaths, and marriages registered during the year ending 30th June, 1838.

The probable Duration of Life—meaning, by such probable duration, the chances that any individual of a given age has of attaining to any other specified age—differs at different periods and in different countries, and has not been ascertained in any with sufficient precision. To determine a question of this sort with the required accuracy, it would be necessary to take a large number of individuals, as 400,000 or 500,000, indiscriminately selected from all ranks and orders of the community, and to trace their lives from the moment of their birth, marking the exact period of the demise of each individual. The results being collected in a *Table of Mortality*, we should be able to deduce from them the expectation of life at any given age. But governments, which alone have the means of framing such tables on an adequate scale, and with the necessary precautions, have been singularly inattentive to their duty in this respect. And until a very few years since, when Mr. Finlaison was employed to calculate tables of the value of annuities from the ages of the nominees in public tontines, and of individuals on whose lives government had granted annuities, all that had been done in this country to construct tables of mortality, and, by consequence, to lay a foundation on which to construct the vast fabric of life insurance, was the work of a few private persons, who had, of course, but a limited number of observations to work on. Subjoined is

An Account of the Ages of 3,938,496 Persons buried in England and Wales (of whom 1,996,195 Males, 1,942,301 Females), during Eighteen Years, 1813—1830.

Age.	Males.	Females.	Both Sexes.	Age.	Males.	Females.	Both Sexes.	Age.	Males.	Females.	Both Sexes.
Under One Year.	436,946	341,137	778,083	40	16,209	17,304	33,513	80	20,666	24,951	45,617
1	139,426	127,137	266,443	41	10,083	10,906	20,989	81	13,146	14,279	27,425
2	78,114	75,900	154,014	42	13,493	14,073	27,566	82	15,523	17,582	33,105
3	47,890	46,773	94,663	43	10,828	11,489	22,317	83	12,072	13,721	25,793
4	33,693	32,076	65,769	44	12,292	12,666	24,958	84	15,920	18,477	34,397
5	24,854	23,340	48,194	45	15,532	14,548	30,080	85	12,245	14,187	26,432
6	19,376	18,091	37,467	46	12,601	12,334	24,935	86	8,854	10,437	19,291
7	16,467	14,668	31,135	47	12,633	12,103	24,736	87	7,070	8,489	15,559
8	13,895	12,363	26,258	48	13,801	13,230	27,031	88	6,762	8,325	15,087
9	12,671	11,270	23,941	49	12,203	11,486	23,689	89	4,468	5,637	10,105
10	11,610	10,527	22,137	50	17,468	16,059	33,527	90	4,549	6,624	11,173
11	10,441	9,777	20,218	51	10,792	10,119	20,911	91	2,293	3,057	5,350
12	9,996	9,800	19,796	52	14,544	13,875	28,419	92	2,038	2,867	4,905
13	9,688	10,261	19,949	53	13,050	12,009	25,059	93	1,598	2,258	3,856
14	10,589	11,790	22,379	54	13,148	12,346	25,494	94	1,129	1,685	2,814
15	10,096	12,527	22,623	55	16,303	15,209	31,512	95	977	1,582	2,559
16	11,385	13,737	25,122	56	15,705	14,589	30,294	96	715	1,182	1,897
17	12,568	14,212	26,780	57	14,067	12,995	27,062	97	494	846	1,340
18	14,212	14,998	29,210	58	14,287	13,414	27,701	98	426	708	1,134
19	15,144	16,061	31,205	59	13,479	12,303	25,782	99	267	495	762
20	15,245	16,041	31,286	60	21,835	21,438	43,273	100	239	468	707
21	15,834	16,237	32,071	61	13,533	12,551	26,084	101	133	225	358
22	16,188	17,597	33,785	62	16,693	16,253	32,946	102	70	174	244
23	14,850	16,803	31,653	63	18.631	18,282	36,913	103	63	134	197
24	14,515	16,722	31,237	64	17,761	17,629	35,390	104	41	90	131
25	14,569	16,586	31,155	65	18,911	18,723	37,634	105	29	72	101
26	13,785	16,318	30,103	66	20,160	20,332	40.492	106	17	29	46
27	13,623	16,133	29,756	67	19,352	19,523	38,875	107	13	21	34
28	13,778	16,272	30,050	68	18,315	18,298	36,613	108	10	18	28
29	12,199	14,431	26,630	69	16,816	16,222	33,038	109	6	12	18
30	14,513	16,514	31,027	70	26,187	27,766	53,953	110	7	11	18
31	10,338	11,963	22,301	71	16,008	16,154	32,162	111	2	3	5
32	12,597	14,427	27,024	72	21,085	21,868	42,953	112	1	1	2
33	12,409	14,227	26,636	73	20,562	21,363	41,925	113	1	1	2
34	11,605	13,279	24,884	74	20,652	21,163	41,815	114	0	2	2
35	13,741	15,200	28,941	75	21,936	22,884	44,820	117	0	1	1
36	13,234	14,950	28,184	76	19,595	20,522	40,117	118	1	0	1
37	11,873	13,409	25,282	77	21,012	21,845	42,857	119	1	0	1
38	12,519	14,268	26,787	78	19,595	21,030	40,625	120	2	1	3
39	11,167	12,611	23,778	79	15,576	16,433	32,009	124	1	0	1

The Tables of Mortality that have been most commonly used in England, in calculating insurances on lives, &c., are,—that formed by Dr. Price, from observations made at Northampton; and that formed by Mr. Milne, from observations made by Dr. Heysham on the rate of mortality at Carlisle. The latter gives a decidedly lower rate of mortality than the other; and it is seen, by the returns of the ages of nearly 4 millions of persons, who died in England and Wales between 1813 and 1830, that the mortality, as represented by it, does not differ materially from the actual rate in most parts of England; though it was not to be supposed that a table founded on so narrow a basis should give a perfectly fair view of the average mortality of the entire kingdom.

In computing tables of mortality, males and females ought always to be distinguished. The probable life of the latter, at all periods from infancy to old age, very considerably exceeds that of the former. This superiority is set in the clearest point of view by the researches of Mr. Finlaison, as exhibited in the tables given above.

Supposing the burial registers to have been all the while about equally accurate, it appears (Table, p. 411.) that, during the 5 years ending with 1800, 1 in every 48 of the population died annually; during the 5 years ending with 1810, the ratio of mortality was 1 in every 49; during the 5 years ending with 1820, it was reduced to 1 in 55; and during the 5 years ending with 1830, it again increased, as already observed, to 1 in 51.

It may be, and, indeed, frequently has been, supposed that this diminution in the proportional number of deaths indicates a corresponding improvement of human life. Such, however, is not the case. No conclusions of this sort can be drawn, unless allowance be made for the increase of population; for it is plain that, if the population be progressively augmented by an increasing number of births, the ratio of deaths to the population will not fairly represent the rate of mortality, or entitle us positively to infer whether it has been diminished or not.

The proportion of marriages, in an increasing population, is affected by the same cause. Owing to the greater proportion of children in such a population, the proportion of marriages seems less than it really is.

There can, however, be no doubt that the rate of mortality in England has been materially diminished since the American war. The number of burials, estimated by averages of 5 years, did not differ considerably during the entire period from 1780 to 1815, though the population increased about 3,300,000 in the interval.—(*Preliminary Discourse to Census of* 1831, p. 35.) Neither was the increase occasioned by any increase in the number of births as compared with the bearing women, but by the increased number of children that have been reared, and passed through the different stages of life. "About 100 years back," says Mr. Griffith Davies, "if any dependence can be placed on the registers, the number of annual births did not exceed the number of annual burials, so that the population could not then have been on the increase. The increase since that period must, therefore, be attributed to an increased fruitfulness of the female sex, to immigration, to a diminution in the rate of mortality, or to two or more of those causes combined. But it does not appear that the first of these causes has had any sensible operation; and the second can have had none, otherwise the number of burials must have increased in comparison with the number of births, which is contrary to the fact: the increase of population must, therefore, be entirely attributable to a diminution in the rate of mortality."—(*Report of* 1827 *on Friendly Societies*, p. 38.)

There cannot, in fact, be a doubt that the value of life, in England and Wales, regularly increased from 1740 or 1750 down to 1815; and there are good grounds for thinking that it then exceeded its value in any other country, with the exception of Scotland. Mr. Finlaison has calculated 3 Tables, which are subjoined in an abridged form, that set this improvement in a very striking point of view. The first gives the expectation of life, as deduced from the ages of the subscribers to the Million Tontine of 1695; the second, the expectation of life among the government annuitants, in the interval between 1785 and 1825; and the third, the expectation of life for the whole population, as deduced from the deaths and ages recorded in the parish registers from 1813 to 1830: distinguishing, in all cases, between male and female life. Those on whom the estimates in the first two tables are founded, being annuitants, and generally, therefore, in decidedly comfortable circumstances, must be regarded as picked lives; whereas the latter embrace all sorts. Now, it appears from these tables that the probable life of a male annuitant, 20 years of age, in 1695, was 29·34 years; while, in 1830, the probable life of a male of the same age, taken indiscriminately from the mass of the population, was 39·65 years; exceeding that of the former by more than *ten* years! The improvement in female life has been equally great; but, for obvious reasons, it is not so great when we compare females taken from the mass of the people with female annuitants.

Statement of the Expectation of Life in England and Wales at every 5th Year of Age, deduced from the Ages of the Subscribers to the Million Tontine of 1695; the Annuitants from 1785 to 1825; and the Deaths in the Parish Registers from 1813 to 1830.

Age.	Million Tontine of 1695.			Annuitants, 1785—1825.			Parish Registers, 1813—1830.		
	Expectation. Males.	Difference.	Expectation. Females.	Expectation. Males.	Difference.	Expectation. Females.	Expectation. Males.	Difference.	Expectation. Females.
Under 1 year -	37·61	- -	- -	50·16	5·35	55·51	39·96	3·24	43·20
1	38·49	5·36	43·85	50·13	5·46	55·59	47·78	2·36	50·14
5	39·03	3·41	42·44	48·93	5·30	54·23	49·80	1·49	51·29
10	35·71	4·72	40·43	45·57	5·48	51·05	46·83	1·12	47·95
15	32·06	5·27	37·32	41·76	5·43	47·19	43·08	1·00	44·08
20	29·34	4·91	34·25	38·39	5·60	43·99	39·65	1·03	40·68
25	27·96	3·71	31·67	35·90	4·91	40·81	36·55	1·09	37·64
30	26·27	2·71	28·98	33·17	4·40	37·57	33·34	1·29	34·63
35	24·12	2·20	26·32	30·17	4·14	34·31	30·03	1·48	31·51
40	21·74	1·91	23·65	27·02	4·10	31·12	26·75	1·63	28·38
45	19·15	1·47	20·62	23·75	4·06	27·81	23·48	1·66	25·14
50	16·86	·92	17·78	20·30	4·05	24·35	20·31	1·52	21·83
55	14·52	·94	15·46	17·15	3·64	20·79	17·19	1·32	18·51
60	11·65	1·60	13·25	14·39	2·93	17·32	14·20	1·08	15·28
65	9·30	·93	10·23	11·63	2·37	14·00	11·43	·89	12·32
70	7·19	·60	7·79	9·22	1·77	10·99	8·94	·73	9·67
75	5·61	·05	5·56	7·12	1·34	8·46	6·78	·55	7·33
80	4·92	1·13	3·79	4·94	1·56	6·50	5·05	·41	5·46
85	3·58	·22	3·80	3·12	1·72	4·84	3·85	·37	4·22
90	2·01	·53	2·54	1·95	·88	2·83	3·42	·28	3·70
95	1·18	·46	1·64	1·18	·37	1·55	3·06	·16	3·22
100	0·00	- -	0·00	·0	·50	·50	2·78	·06	2·72
Sums of ages -	370·68		411·37	465·79		535·80	474·30		495·70

This wonderful improvement must, no doubt, be ascribed to a variety of causes: partly to the drainage of bogs and marshes, by which agues and marsh fevers have been entirely banished from many districts; partly to improvements in the diet, dress, lodgings, and other accommodations of the mass of the people; partly to the greater prevalence of cleanliness; and partly, and, since 1800, chiefly, perhaps, to the discoveries in medical science, and the extirpation of the small-pox.

It appears, however, that the rate of mortality had been reduced to a *minimum* in 1815, and that it increased somewhat in the interval between that and 1830. Probably this was only, in part at least, a temporary effect, caused by the distress resulting from the sudden transition from a state of war to one of peace; and by the severe shock that the fall of prices in 1815, and the destruction of country banks, and of country bank paper, in that year, gave to almost every species of industry. If the increased mortality be still maintained, the causes that have produced it will afford matter for interesting investigation. Perhaps it will be found that the Irish immigration, already alluded to, has had a good deal to do in bringing it about.

The mortality in infancy being greater than at any subsequent period of life, it follows that in a country, the population of which is rapidly increasing, — not by immigration, but by births, — the probable duration of life at birth is less than it would be, other things being the same, were the population stationary, or increasing less rapidly. "The probability of life in England (*vie probable*), "says Mr. Rickman, " is 25 years at birth; but in the North Riding of the county of York one half are not dead until the age of 30 years; whereas in the West Riding of the same county one half are dead at 18 years of age: an incredible disparity in adjoining districts, were it not known that the population of the North Riding increases slowly, that of the West Riding rapidly; whence the young are in greater proportion in the latter, and the mortality of infants, especially of the male sex, in the first two years of life, produces this preponderance of early death in the West Riding. This cause is so powerful, that in Lancashire, where the population increases even more rapidly, one half of the individuals born have not attained the age of 12 years; one half the males being dead at 7 years, and one half of the females between 16 or 17 years of age: such, indeed, on infant life is the effect of crowded residence in the immediate vicinity of the several factories, that in Lancashire 36 per cent. of male infants, and 31 per cent. of female infants, die before they are 2 years old.* A rapid increase of population infers the birth and existence of a large proportion of infants, and, therefore, a large proportion of short-lived persons; thereby accelerating, *pro rata*, the time of life or age at which one half of the population collectively are dead." — (*Preliminary Remarks to Census of* 1831, p. 46.)

Mr. Rickman has added to his preface a table (p. 54.), exhihiting the expectation of life at birth, as deduced from the ages of those who died between the years 1813—1830, as influenced by the per centage increase of population from 1801 to 1831. It appears from this table that, had the population been stationary, the expectation of life at birth would, at an average of the kingdom, have been 44 years: where the per centage increase is 5, the expectation is 43 years; where the former is 10, the latter is 42; where the per centage of increase is 50, the expectation of life is reduced to 34; and where the population has been doubled, or the increase has been 100 per cent., the expectation has been only 24 years!

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* No good evidence has ever been given, or, we believe, can be given, to prove that factory labour in the cotton and woollen mills at Manchester and other great towns is injurious to the health either of the adults or non-adults employed in them. So far as the excessive mortality referred to by Mr. Rickman is not accounted for by the rapid increase of the population, it is explained by the extremely destitute condition of a large portion of the population not employed in factories; by the damp, ill-ventilated, miserable houses in which many of the poor live; and the filth and want of cleanliness so disgustingly prevalent among the Irish part of the population.

The determination of the average expectation of life at birth is, however, of comparatively little practical importance. The great object is to ascertain the probability of life at any given period, or the chances that an individual of a certain age has of attaining to any other age. And it appears from the preceding table, founded on the deaths (1,996,195 males, and 1,942,301 females, of which the ages were known) from 1813 to 1830, that, at an average of England and Wales, the probable life of a male 5 years of age is 49·80 years, and of a female 51·29: at 10 years of age the probable life of a male is 46·83, of a female 47·95 years, &c.

Proportion of Ages to the Population. — This proportion may be ascertained by taking an account of the ages of the population when a census is made. No compulsory return of this sort has been obtained in England; but in 1821 it was left to the option of the overseers to inquire into the ages of individuals, when they thought it might be done in a manner satisfactory to themselves, and not inconvenient to the parties; and it is a remarkable proof of the zeal of the overseers and the good will of the public, that, under this recommendation, the ages of no fewer than 10,530,671 persons were ascertained in England and Wales. The results of this enumeration are given in the subjoined Table. From this it appears that, supposing the enumerated population to be represented by, 1,000, nearly half the whole, or 490, were under 20 years of age; 275·4 were between 20 and 40; 159·3 between 40 and 60; and so on.

Ages of Persons enumerated in England and Wales, May 28. 1821, with Proportions annexed, supposing each Sex and the Total to have been 10,000,000.

Ages.	Males.		Females.		Total.	
Under Five Years - -	791,579	1,536,732	774,689	1,440,044	1,566,268	1,487,339
5— 9 - - -	693,858	1,347,022	682,457	1,268,597	1,376,315	1,306,958
10—14 - - -	603,613	1,171,824	569,366	1,058,376	1,172,979	1,113,869
15—19 - - -	509,586	989,285	535,569	995,552	1,045,155	992,487
20—29 - - -	755,780	1,467,234	901,338	1,675,468	1,657,118	1,573,611
30—39 - - -	593,662	1,152,506	649,507	1,207,348	1,243,169	1,180,522
40—49 - - -	482,329	936,370	500,977	931,250	983,306	933,755
50—59 - - -	342,204	664,338	352,160	654,619	694,364	659,373
60—69 - - -	231,509	449,440	249,184	463,200	480,693	456,470
70—79 - - -	115,032	223,317	124,648	231,704	239,680	227,602
80—89 - - -	29,567	57,438	36,315	67,505	65,902	62,581
90—99 - - -	2,253	4,378	3,280	6,097	5,533	5,254
100 and upwards - -	60	116	129	240	189	179
Totals - - -	5,151,052	10,000,000	5,379,619	10,000,000	10,530,671	10,000,000

SECT. II. — *Population of Scotland.*

Races of Inhabitants. — It is generally allowed that the first immigrants into Scotland, like those into England, belonged to the great Celtic family; and Mr. Chalmers and others have endeavoured to prove that the population continued to be purely Celtic till it was alloyed first by Roman, and subsequently by Gothic, invaders. — (*Caledonia*, vol. i. p. 496. &c.) But this opinion does not seem very tenable. Tacitus expressly affirms that the Caledonians or inhabitants of Scotland, were of Germanic or Gothic origin: "*Rutilæ Caledoniam habitantium comæ, magni artus, Germanicam originem asseverant.*" — (*Vit. Agricolæ*, cap. 11.) But Agricola, from whom Tacitus derived his information, was but very slenderly acquainted with the country to the north of the Grampians. There is no reason to doubt that Berwickshire, the Lothians, Fife, and other parts of the low country on the east coast of Scotland, were, like the same tracts in England, early occupied by Belgic or other Gothic colonists from the opposite continental coast; and it seems most probable that Tacitus, in ascribing to the Caledonians a Germanic origin, had these only in view. The fair presumption is, that, in the northern as in the more southern part of the island, the old Celtic inhabitants maintained their ascendancy in all the mountainous and comparatively inacessible districts; and this reasonable presumption is corroborated by various circumstances.

In the third century, the terms Picts and Pictland began to be substituted for Caledonians and Caledonia. It is pretty generally believed that these terms apply to the same people and the same country. It seems, indeed, to be perfectly clear that the Picts were descended from the Scythians or Goths*; and if we be right in our statement as to the origin of the Caledonians, it follows that, if the Picts were not identical with them, they belonged, at all events, to a kindred race.

We have already stated (*ante*, p. 232.), that at an early period a colony of a people called *Scoti* or *Attacotti* (the *Dalriads* of the venerable Bede) passed from Ireland into the Western Highlands. The origin of the Scoti is involved in impenetrable mystery. If, as is believed by many, they were of Gothic or Scythian origin, they had lost their ancient speech; and had, with the language, adopted the manners and institutions of the Irish Celts or Gael. The Scoto-Irish colonists in Argyle received, at subsequent periods, reinforcements from Ireland; and they are said by some to have conquered the Caledonians or Picts, and, in the sequel, to have succeeded in establishing their language and customs in all that part of Scotland known by the name of the Highlands. But there is no evidence that any such conquest actually took place; and the whole story seems destitute of any solid foundation. As already stated, the probability appears to be that all the western and central parts of the Highlands were occupied, at the period when the Scotch established themselves in Argyle, by a congenerous race, or by Celts. The Scotch colonists, had, however, a written language, which the old inhabitants of the country had not; and they were, also, superior to the latter in most sorts of knowledge and civilisation.† These circumstances sufficiently account for the ascendancy they acquired and for their being able to give their name to the country. But it is inconsistent alike with historical evidence, and with probability, to suppose that the Scotch came over in sufficient numbers to change the language of the country, had it differed very materially from their own. It is generally admitted that they had lost their original language during their residence in Ireland; and no doubt they would have lost the newly acquired language they brought into the Highlands, had it not been, in all its most essential particulars, the same with that in common use in the country.

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* See Pinkerton's chapter on the origin of the Picts in his *Inquiry into the early History of Scotland.*

† *Pinkerton on the early History of Scotland*, vol. ii. p. 160.

After the Romans withdrew from Britain, some Gothic or Saxon tribes, following the example set by those who had previously settled in the more southerly parts of the island, established themselves, during the sixth century of our era, between the Tweed and the Frith of Forth. — (*Turner's Anglo-Saxons*, 5th ed. vol. i. p. 299.) These new immigrants were afterwards followed by others, at the same time that they drew recruits from their brethren established in England; and Mr. Chalmers supposes that, their power being thus progressively augmented, they gradually acquired a complete ascendancy in all the southern parts of the country, and communicated to it their language and manners. — (*Caledonia*, vol. ii. p. 7.) This, however, would have been an extremely difficult task; but if, which seems abundantly certain, we conclude with Pinkerton that the Picts, who were in possession of all the low country in the sixth century, were congenerous with the Saxons, by whom it was then invaded, the two races would readily amalgamate; and the early prevalence of the Scandinavian or Gothic tongue in the Lowlands is rationally accounted for.

After the Saxons or Goths in the Lowlands, and the Celtic colonists from Ireland, and other Celtic inhabitants of the Highlands, had been united under one government, the name Scotland, which had previously been given to the country to the north of the Friths of Forth and Clyde, was used to distinguish the whole country to the north of England.

Towards the end of the eighth century, a fresh colony from Ireland established itself in the district now known by the name of Galloway, in the south-west part of Scotland. But though these colonists succeeded in giving a name to the country, they were not sufficiently numerous to introduce their language into common use.* And for these several centuries, long indeed before the inhabitants had any considerable intercourse with other parts of the kingdom, the Anglo-Saxon tongue has been in as universal use in Galloway as in any part of the Lowlands of Scotland.

Exclusive of the Celts, Goths, or Picts, Romans, Scoto-Irish, and Saxons, colonies of Danes and Norwegians established themselves in Caithness and other parts of the mainland, as well as in Orkney and Shetland, and parts of the Western Isles. Generally, however, it may be said that at present the inhabitants of the Lowlands of Scotland are principally of Saxon, while those of the Highlands, with the exception of Caithness, are almost entirely of Celtic extraction.

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* "Galloway, in the Latine writers of the middle tyme, *Gaelvallia* sive *Gallovidia*, so called be the Irich who sometyme dwelt there, and terme themselves, in their awne language, *Gael.*" — *Timothy Pont's Galloway*, in the *Appendix to Symson's Galloway*, p. 114.

Progress of Population in Scotland. — Number of Inhabitants. — The notices of the population of Scotland in remote periods are few and of little authority. It is plain, however, from the sterile nature of the greater part of the country; its generally unsettled and turbulent condition, marked by the prevalence of insurrections and civil wars; the want of large towns, manufactures, and commerce; and the frequent recurrence of destructive scarcities*, that the population in remote periods must have been extremely small. It began to increase after the accession of the house of Stuart to the throne of England, when a more powerful government was established; but at the period of the Union, in 1707, it is not supposed to have exceeded 1,050,000.

Until after the rebellion of 1745, Scotland reaped but little advantage from the Union. That event, however, though disastrous at the time, was in the end highly beneficial. It stimulated government to adopt measures for suppressing those feudal institutions that had long been the bane of Scotland, and for introducing civilisation and good order into the Highlands. The act of 1748, for the abolition of all sorts of hereditary jurisdictions, and the appointment by the crown of stipendiary sheriffs and other judicial officers, has been in the highest degree advantageous, as well by preventing abuse as by insuring the cheap and impartial administration of justice. The construction of military roads, that laid open the more inaccessible parts of the Highlands, was also a most important measure. After this had been done, it ceased to be possible for any chieftain or clan to brave the law with impunity; its empire was every where established; and, in consequence, the energies of the people began to be turned from projects of rapine, vengeance, or petty wars, towards other and more beneficial objects of pursuit.

Improvements of all sorts—in agriculture, manufactures, and commerce — began to make rapid advances in Scotland after the peace of Paris in 1763. And we believe we are warranted in affirming that, from the close of the American war down to the present day, the progress of Scotland, in civilisation and the accumulation of wealth, has not been surpassed, if it ever have been equalled, by that of any other European country.

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* Some of these scarcities were very severe, and extended their ravages over a great extent of country. Those of 1635, 1688, the period from 1693 to 1700—emphatically termed the "seven ill years," 1740 and 1782, 1783, were particularly severe. During the "seven ill years" the distress was so great that several extensive parishes in Aberdeenshire, and other parts of the country, were nearly depopulated; and some farms remained unoccupied for several years afterwards. In 1783, vast numbers of the small Highland farmers were ruined; and many persons died of want. — (*Sinclair's Statistical Account of Scotland*, vol. vi. p. 121. *Malthus, on Population*, 5th ed. vol. ii. p. 125.)

But, though the population be now nearly double what it was in 1783, such distressing calamities no longer occur. This is owing, partly to the improved state of agriculture, partly to the greater comforts enjoyed by all classes, which enables them to retrench in periods of scarcity, and partly to the extensive intercourse carried on with other countries, whence supplies of corn, &c., may be brought in scarce years.

In 1755, the population of Scotland was determined for the first time with tolerable precision. It was then ascertained, principally from returns furnished by the clergy to Dr. Webster, the omissions and deficiencies being supplied from the most approved data, that it contained 1,265,380 inhabitants. The population of 1801, according to the census of that year, amounted to 1,599,068, being an excess of 333,688 individuals over that of 1755. The population at the last-mentioned epoch, with its progress during the present century, is seen in the following Table:—

Population of Scotland in 1755, 1801, 1811, 1821, and 1831; showing its Amount at each Epoch in each County, with the Ratio of Increase in each Decennial Period since 1801; and the Numbers of Males and Females in each County in 1831.

Counties.	1755.	1801.	Inc. per cent.	1811.	Inc. per cent.	1821.	Inc. per cent.	1831.		
								Males.	Females.	Total of both sexes.
Aberdeen - -	116,836	123,082	10	135,075	15	155,387	14	82,588	95,069	177,651
Argyle - - -	63,291	71,859	19	85,585	14	97,316	4	49,844	51,129	100,973
Ayr - - -	59,009	84,306	23	103,954	22	127,299	14	69,717	75,338	145,055
Banff - - -	36,521	35,807	2	36,668	19	43,561	12	22,743	25,861	48,604
Berwick - -	24,946	30,621	1	30,779	8	33,385	2	16,239	17,809	34,048
Bute - - -	7,125	11,791	2	12,033	15	13,797	3	6,495	7,656	14,151
Caithness - -	22,215	22,609	4	23,419	29	30,238	14	16,359	18,170	34,529
Clackmannan - -	9,003	10,858	11	12,010	10	13,263	11	7,095	7,634	14,729
Dumbarton - -	13,857	20,710	17	24,189	13	27,317	22	16,321	16,890	33,211
Dumfries - -	41,913	54,597	15	62,960	13	70,878	4	34,829	38,941	73,770
Edinburgh - -	90,412	122,954	21	148,607	29	191,514	15	99,803	119,542	219,345
Moray - - -	28,934	26,705	5	28,108	11	31,162	10	15,779	18,452	34,231
Fife - - -	81,570	93,743	8	101,272	13	114,556	12	60,781	68,058	128,839
Forfar - - -	68,297	99,127	8	107,264	6	113,430	23	65,093	74,513	139,606
Haddington - -	29,709	29,986	4	31,164	13	35,127	3	17,397	18,748	36,145
Inverness - -	64,656	74,292	5	78,336	15	90,157	5	44,510	50,287	94,797
Kincardine - -	24,346	26,349	4	27,439	6	29,118	8	15,016	16,415	31,431
Kinross - -	4,889	6,725	8	7,245	7	7,762	17	4,519	4,553	9,072
Kirkcudbright - -	21,200	29,211	15	33,684	15	38,903	4	18,969	21,621	40,590
Lanark - - -	81,726	146,699	31	191,752	27	244,387	30	150,229	166,590	316,819
Linlithgow - -	16,829	17,884	9	19,451	17	22,685	3	10,995	12,296	23,291
Nairn - - -	5,694	8,257	—	8,251	9	9,006	4	4,307	5,047	9,354
Orkney and Shetland	38,591	46,844	—	46,153	15	53,124	10	26,594	31,645	58,239
Peebles - - -	8,908	8,735	14	9,935	1	10,046	5	5,342	5,236	10,578
Perth - - -	118,903	126,366	7	135,093	3	139,050	3	68,565	74,329	142,894
Renfrew - -	26,645	78,056	19	92,596	21	112,175	19	61,154	72,289	133,443
Ross and Cromarty -	47,656	35,343	10	68,853	13	68,828	9	34,927	39,893	74,820
Roxburgh - -	31,278	33,682	11	37,230	10	40,892	7	20,761	22,902	43,663
Selkirk - - -	4,368	5,070	16	5,889	13	6,637	2	3,394	3,439	6,833
Stirling - - -	38,813	50,825	14	58,174	12	65,376	11	35,283	37,338	72,621
Sutherland - -	20,774	23,117	2	23,629	—	23,840	7	12,090	13,428	25,518
Wigtown - - -	16,466	22,918	17	26,891	23	33,240	9	17,078	19,180	36,258
Totals -	1,265,380	1,599,068	14	1,805,688	16	2,093,456	13	1,114,816	1,250,298	2,365,114

The progress of population, as evinced in this table, though very considerable, has been less than its progress during the same period in England or Ireland; while there are good grounds for thinking that the wealth of Scotland has increased more rapidly than that of either of these countries. This desirable result seems to have been owing principally to the consolidation of farms in the low country; the introduction of sheep-farming into the Highlands; and the obstacles imposed by the law of Scotland as to leases, and the operation of the poor laws, to the subdivision of the land, and the building of superfluous cottages. These circumstances, combined with the moral and religious habits of the people, and the general diffusion of education, have made marriages to be deferred to a later period than

Table showing the Number of Acres in the several Counties of Scotland, exclusive of Lakes; with the Numbers of Persons, Families, and Inhabited Houses in each County, according to the Population Returns of 1831: showing also the Number of Acres corresponding to each Person, each Family, and each House; and the Number of Persons corresponding to each Family and each House.

Counties.	Number of Acres.	Number, per Population Returns 1831 of,			Number of Acres corresponding to			Number of Persons corresponding to	
		Persons.	Families	Inhab. Houses.	Each Person.	Each Family.	Each House.	Each Family.	Each House.
MAINLAND.									
Aberdeen - -	1,254,400	177,657	39,930	29,502	7·060,797	31·414,976	42·519,151	4·449,211	6·021,863
Argyll, ex. isles -	1,408,000	66,382	12,792	11,150	21·210,569	110·068,792	126·278,027	5·189,337	5·953,543
Ayr - - -	664,960	145,055	30,501	19,001	4·584,192	21·801,252	34·996,053	4·755,746	7·634,072
Banff - -	412,800	48,604	10,855	9,814	8·493,128	38·028,558	42·062,360	4·477,568	4·952,517
Berwick - -	282,880	34,048	7,385	6,159	8·308,271	38·304,672	45·929,536	4·610,427	5·528,170
Caithness - -	439,680	34,529	6,904	6,036	12·733,644	63·684,820	72·842,942	5·001,304	5·720,510
Clackmannan -	30,720	14,729	3,352	2,391	2·085,681	9·164,678	12·848,181	4·394,093	6·160,184
Cromarty - -	163,840	11,299	2,541	2,255	14·500,398	64·478,552	72·656,319	4·446,675	5·010,643
Dumbarton - -	145,920	33,211	6,343	3,785	4·393,725	23·004,887	38·552,180	5·235,851	8·774,378
Dumfries - -	801,920	73,770	14,096	12,365	10·870,543	56·889,898	64·854,023	5·233,400	5·966,033
Edinburgh - -	226,560	219,345	47,415	19,744	1·032,893	4·778,235	11·474,878	4·626,068	11·109,451
Elgin, or Moray	302,720	34,231	7,768	6,919	8·843,446	38·970,134	43·751,987	4·406,668	4·947,391
Fife - - -	298,880	128,839	28,864	20,712	2·319,794	10·354,767	14·430,282	4·463,657	6·220,500
Forfar (Angus) -	568,320	139,606	31,730	19,597	4·070,885	17·911,125	29·000,357	4·399,811	7·123,845
Haddington -	174,080	36,145	8,080	6,561	4·816,157	21·544,554	26·532,541	4·473,391	5·509,069
Inverness, ex. isles	1,858,560	54,059	11,572	10,026	34·380,214	160·608,365	185·374,028	4·671,535	5·391,881
Kincardine - -	243,200	31,431	7,136	6,272	7·737,584	34·080,717	38·775,510	4·404,568	5·011,320
Kinross - -	46,080	9,072	2,019	1,524	5·079,365	22·823,180	30·236,220	4·493,314	5·952,756
Kirkcudbright -	525,760	40,590	8,283	6,604	12·952,944	63·474,586	79·612,356	4·900,398	6·146,275
Lanark - -	602,880	316,819	64,876	58,745	1·902,916	9·292,805	10·262,661	4·883,455	5·393,123
Linlithgow - -	76,800	23,291	5,014	3,400	3·297,411	15·317,112	22·588,235	4·645,193	6·850,294
Nairn - - -	124,800	9,354	2,246	2,074	13·341,886	55·565,449	60·173,578	4·164,737	4·510,125
Peebles - -	204,160	10,578	2,072	1,789	19·300,435	98·532,819	114·119,620	5·105,212	5·912,800
Perth - -	1,656,320	142,894	31,749	23,809	11·591,250	52·169,202	69·566,970	4·500,740	6·001,680
Renfrew - -	144,000	133,443	28,204	11,153	1·079,112	5·105,659	12·911,324	4·731,350	11·964,763
Ross, ex. isles -	1,324,160	48,980	10,638	9,880	27·034,708	124·474,525	134·024,291	4·604,249	4·957,490
Roxburgh - -	457,600	43,663	8,930	6,732	10·480,269	51·243,001	67·973,856	4·889,474	6·485,888
Selkirk - -	168,320	6,833	1,391	1,094	24·633,397	121·006,470	153·857,404	4·912,293	6·245,887
Stirling - -	312,960	72,621	15,351	10,459	4·309,497	20·386,945	29·922,553	4·730,702	6·943,398
Sutherland - -	1,122,560	25,518	5,005	4,821	43·990,908	224·287,712	232·847,957	5·098,502	5·293,093
Wigtown - -	288,960	36,258	7,514	6,404	7·969,552	38·456,215	45·121,799	4·825,393	5·661,774
	16,332,800	2,202,854	470,556	340,777					
Average number of acres and persons corresponding to each person, family, and house in the Mainland - -	- -	- -	- -	- -	7·414,381	34·709,577	47·928,117	4·681,385	6·464,209
ISLANDS.									
THE HEBRIDES:									
Isles of Bute, &c.	103,040	14,151	2,998	2,134	7·281,464	34·369,580	48·284,911	4·720,147	6·631,209
Argyll - -	594,560	34,591	6,460	5,996	17·188,286	92·037,152	99·159,440	5·354,644	5·769,013
Inverness -	736,000	40,738	7,474	7,286	18·066,670	98·474,712	101·015,646	5·450,629	5·591,271
Ross & Crom.	358,400	14,541	3,008	2,904	24·647,548	119·148,936	123·415,978	4·834,109	5·007 231
	1,792,000	104,021	19,940	18,320					
ORKNEY ISLES -	272,000	28,847	6,307	5,437	9·429,057	43·126,685	50·027,589	4·573,807	5·305,683
SHETLAND ISLES	547,200	29,392	5,498	4,859	18·617,311	99·527,101	112·615,765	5·345,944	6·048,981
	2,611,200	162,260	31,745	28,616					
Average number of acres and persons corresponding to each person, family, and house in the Islands,	- -	- -	- -	- -	16·092,690	82·255,478	91·249,650	5·111,356	5·670,254
Totals -	18,944,000	2,365,114	502,301	369,393					
Average number of acres and persons corresponding respectively to each person, family, and house in the kingdom	-	-	-	-	8·009,761	37·714,438	51·284,133	4·708,559	6·402,703

in other parts of the empire; and have also led to a very extensive immigration. But, however, it may be accounted for, the fact is certain that, as compared with the increase of wealth, the population of Scotland has increased less rapidly than that of England, and much less so than that of Ireland. In consequence, the Scotch have advanced more rapidly than the English or Irish in wealth, and in the command of the necessaries and conveniences of life. Their progress in this respect has, indeed, been quite astonishing. The habits, diet, dress, and other accommodations of the people have been signally improved. It is not too much to affirm, that the peasantry of the present day are better lodged, better clothed, and better fed than the middle class of landowners a century ago.

Density of Population. — The population of Scotland is much less dense than that of either England or Ireland. This is occasioned principally, no doubt, by the greater sterility of the soil; but it is also owing, in no inconsiderable degree, to the circumstances that have checked the subdivision of the land, and prevented the too rapid increase of population in the country parishes. The Table in the preceding page embodies all the existing information on this interesting subject.

Population of Principal Towns.—The following Table exhibits the Population of the Principal Towns of Scotland in 1811, 1821, and 1831; showing the Ratio of their Increase, with the Number of Inhabited Houses in 1831, and the average Number of Persons to a House.

Cities and Towns.	Population, 1811.	Increase per Cent.	Population, 1821.	Increase per Cent.	Population, 1831.	Inhabited Houses, 1831.	Persons to a House in 1831.
Edinburgh and Leith -	102,987	34·225	138,235	17·483	162,403	10,179	15·594,710
Glasgow, with Gorbals, &c.	110,460	33·118	147,043	37·664	202,426	41,598	4·886,243
Aberdeen - -	35,370	26.649	44,796	29·518	58,019	5,116	11·340,695
Paisley, with Abbey Parish	36,722	3·571	47,003	22·26	57,466	3,696	15·548,16
Dundee - - - - -	29,616	3·238	30,575	48·34	45,355	3,892	11·653,391
Greenock - - - -	19,042	15·996	22,088	24·823	27,571	2,577	10·698,874
Perth - - - -	16,948	12·508	19,068	4·971	20,016	2,049	9·768,667
Kilmarnock - - -	10,148	25·827	12,769	41·694	18,093	1,578	11·465,779
Dunfermline - - -	11,649	17·443	13,681	24·756	17,068	2,347	7·272,262
Montrose - - - - -	8,955	15·443	10,338	16·608	12,055	1,190	10·130,252
Dumfries* - - - -	9,262	19·326	11,052	5·012	11,606	1,509	7·691,166
Inverness - - - - -	10,757	14·009	12,264	16·797	14,324	2,125	6·740,705
Ayr† - - - - -	6,291	18·502	7,455	2·025	7,606	892	8·526,905
Falkirk - - - -	9,929	16·184	11,536	12·156	12,743	1,646	7·741,798
Wick - - - - -	5,080	32·145	6,713	46·73	9,850	1,578	6·242,078
Stirling - - - -	5,820	22·216	7,113	17·25	8,340	785	10·624,203
Totals - - -	429,036		541,729		684,941	82,757	
Average rate of increase, and average number of inhabitants to a house -	- -	26·266		26·436			8·276,532

It appears, from this and the preceding Table, that while the entire population of Scotland increased, during the ten years ending with 1820, 16 per cent., and during the ten years ending with 1830, 13 per cent., the population of the great towns increased, during the same periods, 26¼ and 26½ per cent. The number of persons to a house in the Scotch towns is greater than in those of most other countries, with the exception of Ireland. In Edinburgh there are nearly 16 individuals to each house; and, at an average, there are

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[*] This is exclusive of Maxwelton, in the parish of Troqueer, a suburb of Dumfries, on the Galloway side of the Nith, with a population of above 3,000.

[†] This is exclusive of Newton-upon-Ayr, a suburb of Ayr, communicating with it by means of bridges, with a population of between 3,000 and 4,000.

8·276 inhabitants to a house in the great towns of Scotland, while in those of England the average is only 6·165. This discrepancy is mainly owing to the custom, formerly so prevalent in Scotland, and not yet entirely laid aside, of building very high houses, and dividing them into distinct stories (provincially *flats*), each story being a separate lodging, and having its entrance by a *common stair*, ascending from the bottom to the top of the building. Some of the old Edinburgh houses have 6 or 7, and a few 10, and even more, such stories, piled one above another. But this custom is now every where falling into disuse, and is seldom acted on in modern buildings. The extraordinary density of population in the Irish towns is partly owing to the same cause, but more to the crowding of families together in the same houses and stories.

Registers. — The Act 6 and 7 Will. 4. cap. 86. (*ante*, p. 409.) did not extend to Scotland; and the Scotch registers of births, marriages, and deaths are so exceedingly defective, that, except in a very few parishes, they are good for nothing. Previously to 1783, it was usual, both with persons belonging to the established church, and the principal classes of dissenters, to register the baptisms of their children. In 1783, however, a tax was imposed on registration, and it was so very unpopular as to cause an instant and almost total cessation of the practice. This injudicious impost was repealed in 1794; but the practice of registration has not been more than partially revived. In proof of this we may mention, that in Edinburgh, in 1834, only 480 births were registered in the thirteen city parishes; being little more than a *fifth part* of what they must have really amounted to!

In Scotland, it is not necessary that marriages should be solemnised by clergymen of the established church, or, indeed, by clergymen at all; the simple declaration of the parties that they are married being, under certain circumstances, quite enough to give validity to the contract. Generally, however, marriages are performed *facie ecclesiæ;* and most persons that have been irregularly united subsequently appear before the session of the parish, and acknowledge their fault. But, notwithstanding, the marriage register is, in nine cases out of ten, a register of the *publication of banns* merely, and not of marriages. Sometimes the proposed marriage never takes place; and when, as is frequently the case, the man resides in one parish, and the woman in another, there is a double proclamation of banns; so that the register affords few conclusions, except such as are false and misleading.

In many parishes there is no register of burials; and in those,where it is kept it is, in general, very little to be depended on. It is common, particularly in country parishes, in Scotland, for persons to be buried, not in the parish where they resided at the time of their death, but in some contiguous parish, where their ancestors have been buried; so that, although the registers of burials were accurately kept, they could not afford any means of fairly estimating the mortality in particular parishes. Poor persons pay no burial fees, and are not usually registered.

It is much to be wished that something effectual were done to put an end to a state of things so adverse to the interests of individuals, as well as to the progress of statistical science. Various bills in relation to it have been introduced into parliament; but none of these has hitherto passed into a law. It will be essential to the success of any measures that may be taken with respect to it, that the registration should be compulsory on all individuals, and that it should be committed to the care of respectable parties, — perhaps the parish schoolmaster would be the best of any, — who should have an interest in seeing that it was made as complete and perfect as possible.

Population of Glasgow, in 1780, 42,832; in 1801, 83,769; in 1830, males 93,724, females 108,702, total 202,426.

Births and Baptisms in 1830.	Males.	Females.	Total.
Returns from clergymen and lay pastors - -	3,281	3,116	6,397
Add still-born from ditto - - -	246	225	471
Total -	3,527	3,341	6,868
Of this number were registered only - -	1,678	1,547	3,225
Number unregistered, exclusive of still-born -	1,603	1,569	3,172

The children were baptized as follows, viz.:

By Clergymen of the Church of Scotland - - -	3,123	
— Secession Church - - -	664	
— Relief Church - - - -	671	
— Roman Catholic Church - - -	915	
— Scotch Episcopal Church, Independents, Methodists, and other denominations, including births among Baptists, Society of Friends, Jews, &c. - - - -	1,024	
		6,397

Hence, as the population was 202,426, there was *one* birth for every 29·47 persons.

Marriages in 1830: — In the city, 857; Barony, 691; Gorbals, 371; total, 1,919; being *one* marriage for every 105·48 persons. Hence, also, as the births were 6,868, there were 3·57 births for every marriage.

Burials in 1830.				Of whom have died,			
In	Males.	Females.	Total.		Males.	Females.	Total.
January - -	273	268	541	Still-born -	246	225	471
February -	226	223	449	Under one year -	463	414	877
March - -	218	207	425	1 & under 2	316	307	623
April - -	208	184	392	2 — 5	263	237	500
May - -	185	175	360	5 — 10	134	119	253
June - -	200	178	378	10 — 20	144	132	276
July - -	194	182	376	20 — 30	189	145	334
August - -	232	206	438	30 — 40	169	144	313
September -	240	229	469	40 — 50	184	164	348
October - -	236	184	420	50 — 60	177	175	352
November -	234	189	423	60 — 70	168	171	339
December -	255	259	514	70 — 75	109	102	211
				75 — 80	55	58	113
Totals -	2,701	2,484	5,185	80 — 85	48	48	96
				85 — 90	24	26	50
				90 — 95	9	10	19
				95 — 100	3	6	9
				104 - -	0	1	1
				Totals -	2,701	2,484	5,185

Being *one* burial for every 39·04 persons.

Ages of Persons in Glasgow, and the Suburban Parishes of Barony and Gorbals, in 1830.

	Under Five.	Five to Ten.	Ten to Fifteen.	Fifteen to Twenty.	Twenty to Thirty.	Thirty to Forty.	Forty to Fifty.
Males -	15,422	13,127	10,491	8,489	15,177	12,179	8,685
Females -	14,855	12,580	10,720	12,256	23,008	14,240	9,329
Totals	30,277	25,707	21,211	20,745	38,185	26,419	18,014

	Fifty to Sixty.	Sixty to Seventy.	Seventy to Eighty.	Eighty to Ninety.	Ninety to a Hundred.	100 and upwards.	Totals.
Males -	5,549	3,228	1,090	260	26	1	93,724
Females -	6,099	3,692	1,502	385	32	4	108,702
Totals	11,648	6,920	2,592	645	58	5	202,426

Families. — The Householders were distributed as follows: — Married Men, 30,032; Widowers, 1,790; Bachelors, 1,437; total Male Householders, 33,259: to these have to be added, Female Householders, viz., Widows, 6,824; Spinsters, 1,882; being together, 8,786; making the entire number of 41,965 families.

Persons to a Family. — The number of families, in 1830, being 41,965, each family must, at an average, have consisted of 4·82 persons.

Persons to a House. — The number of houses, in 1830, being 41,598, each house must, at an average, have been occupied by 4·866, or nearly 5, persons.

Races. — In 1831 the population consisted of Scotch, 163,600; Irish, 35,554; English, 2,919; Foreigners, 353; in all, 202,426.

Ages. — The following account of the ages of the people of Scotland was obtained under the census of 1821: —

Abstract of the Ages of Persons in Scotland (distinguishing between Males and Females), according to the Enumeration of 1821.

Ages.	Males.	Females.
Under 5 years - - - - - - - - -	137,956	133,711
From 5 to 10 - - - - - - - - -	125,298	121,575
10 to 15 - - - - - - - - -	115,183	109,247
15 to 20 - - - - - - - - -	95,319	108,306
20 to 30 - - - - - - - - -	137,645	182,712
30 to 40 - - - - - - - - -	107,107	124,380
40 to 50 - - - - - - - - -	82,695	96,991
50 to 60 - - - - - - - - -	60,014	73,518
60 to 70 - - - - - - - - -	42,309	51,868
70 to 80 - - - - - - - - -	19,977	23,298
80 to 90 - - - - - - - - -	5,377	6,734
90 to 100 - - - - - - - - -	620	766
100 and upwards - - - - - - -	40	62
Enumerated - - -	923,540	1,033,166
Persons whose ages were not returned, suppose half males, and half females - - - - - -	68,375	68,375
	991,915	1,101,541
Making together - - -		2,093,456

Births, Marriages, Burials, &c. at Glasgow, in 1830. — The only details with respect to the births, marriages, and deaths, of any considerable part of the population of Scotland, on which dependence may be placed, are those for the city of Glasgow during some late years: they were framed through the meritorious exertions of Dr. Cleland, of that city, whose devotion to statistical inquiries is well known. The particulars given in the two preceding pages were too interesting to be omitted in a work of this sort.

Sect. III. — *Population of Ireland.*

Races of Inhabitants. — The first inhabitants of Ireland, of which history preserves any account, are generally admitted to have belonged, as well as their neighbours in Britain, to the great Celtic family. The question, whether the island was first colonised by emigrants from Britain, Gaul, or Spain, has been much agitated. Its investigation was hardly worth the learning and ingenious conjecture expended upon it. The proximity of Britain to the Continent affords the strongest grounds for supposing that she was peopled antecedently to Ireland; and the contiguity of the latter to Britain affords, also, a strong presumption in favour of the conclusion that her first occupants proceeded from the latter. It appears, indeed, to be exceedingly probable that the Phœnicians visited Ireland; and, if so, colonists might have been carried to her shores from Cadiz, and other parts of Spain, in Phœnician ships. But there is no really authentic evidence to prove that such was the case; and, considering the length, and (which it must have been in those days) the dangerous nature of the voyage, though it were admitted that Spanish colonists had early settled in Ireland, there seems no reason to think that they did so in any considerable numbers, or that their descendants ever occupied the country. On the whole, therefore, the fair presumption seems to be, that the original population of Ireland was principally derived from Britain, but partially also from Gaul.

We have already noticed the emigration of the Gaelic Celts from Britain to Ireland, subsequent to the invasion of the former by the Cimbric Celts. — (*Ante*, p. 396.) A great diversity of opinion exists, and an almost impenetrable obscurity hangs over every circumstance respecting the establishment of the *Scoti* in Ireland. Colonists from Belgium are known to have settled in it, and Pinkerton supposes that they were the progenitors of the Scotch; but this is disputed by Moore and others, who contend that the settlement of the Scotch in Ireland is of a comparatively recent date; and that they were of Scandinavian origin.

But though these Belgian or northern invaders succeeded in obtaining an ascendancy in parts of Ireland, they were not sufficiently numerous to make any considerable change on the language, character, or institutions of its ancient Celtic inhabitants. "The conquering tribes themselves, one after another, became mingled with the general mass, leaving only in those few Teutonic words, which are found mixed up with the native Celtic, any vestige of their once separate existence." — (*Moore's Ireland*, vol. i. p. 98.)

The first permanent change in the population of Ireland was not effected till its invasion by the English under Henry II., in 1172. But the number of English settlers in Ireland was, for a long period, inconsiderable. For some centuries the English dominions were confined within the narrow limits of the *pale*, which seldom extended beyond the modern province of Leinster, and was frequently much less considerable. The rest of the country continued to be occupied by the natives, their chiefs yielding little more than a mere nominal obedience to the crown of England; and the few Englishmen that settled among them, having adopted their manners, are said to have become, in no very long period, *Hibernis ipsis Hiberniores!* During the reign of Elizabeth, an Irish chief, the Earl of Tyrone, raised a formidable rebellion; but this was suppressed by the exertions of the deputy, Lord Mountjoy, who succeeded, for the first time, in establishing the English authority in most parts of the island. In the following reign, an attempt was made to eradicate the seeds of future disorders, by abolishing some of the distinguishing laws and customs of the Irish, which served only to perpetuate their barbarism; and the lands in the greater part of Ulster, having fallen to the crown by forfeiture, were assigned partly to companies of the city of London, and partly to others, by whom great numbers of English and Scotch colonists were settled upon them.

These judicious measures contributed to introduce civilisation, industry, and good order into the country. Unfortunately, however, the most efficient of all methods for changing the habits of a people — the general establishment of schools, where the natives might have been instructed in the English language, and in the duties enjoined by religion and morality — was neglected. The English newly settled in Ireland having also adopted the reformed faith, while the greater number of the old English of the *pale*, and the entire body of native Irish, were bigoted adherents of the Catholic creed, a new and most potent element of discord was brought into the field. The Catholic religion was, indeed, tolerated; but the churches and ecclesiastical revenues, that had once been enjoyed by its priests, having been assigned to others, they naturally became the implacable enemies of the English and the English connection, and took every opportunity to excite against them the prejudices and rancour of their countrymen. In 1641, when England was deeply agitated by those dissensions that soon after ended in a civil war, the Irish, inflamed by these and other causes of discontent, contrived and carried into effect a simultaneous massacre of the English in all parts of the country. The unsuspecting victims — men, women, and children — were involved in one common destruction. Not satisfied with taking their lives under the most aggravated circumstances of atrocity and indignity, they pillaged and burned their property, and seized and destroyed their houses! So complete was the devastation, that had it not been that the authorities in Dublin got notice of the insurrection before it actually broke out, and took measures to guard against it, almost every memorial of the English name would have been annihilated in Ireland: for that part of the English that were Catholics had lost most of the distinguishing characteristics of their ancestors; and some of them, indeed, emulated the native Irish in their cruelty to their Protestant countrymen.

The English ascendancy in Ireland was again partially restored during the concluding part of the distracted reign of Charles I. But it was not till the vigorous administration of Cromwell that vengeance was taken for the massacre of 1641, and that the supremacy of England was completely re-established. Still, however, no effectual measures were taken for extirpating the seeds of future rebellions, by providing for the incorporation of the English and Irish; or for removing those religious animosities that had been productive of so much mischief.

In consequence of the prevalence of Catholicism in Ireland, the people generally espoused the cause of the Stuart family. But the arms of William III. being successful, the revolutionary government was established there as well as in England. Unhappily, however, the Catholics were deprived, contrary to the stipulations of the treaty of Limerick, of some of the most important privileges enjoyed by their Protestant countrymen, and were regarded by government with contempt and aversion; and, notwithstanding the growing liberality of the times, and the repeal of some obnoxious statutes, they were left, despite their rapidly increasing numbers, to labour under degrading disabilities, that have been but lately removed. Even now the only established or endowed religion is that of the church of England, the adherents of which do not exceed a tenth part of the entire population; so that the Irish Catholic priests and laity still continue subject to all those irritating and powerful influences that did so much to promote the rebellion of 1641.

Progress of Population in Ireland. — The first authentic account of the population of Ireland is given by Sir William Petty, in his tract entitled *The Political Anatomy of Ireland.* Sir William was employed by government to superintend the survey and valuation of the forfeited estates, instituted during the Protectorate; and so well did he execute his task, that this survey continues, after the lapse of near two centuries, the standard of reference in the courts of law, as to all points of property. He had, therefore, the best means of obtaining accurate information with respect to the numbers and condition of the people; and as the results of his researches on these points are exceedingly curious, we shall give them in his own words: —

> "The number of people now in Ireland (1672) is about 1,100,000, viz. 300,000 English, Scotch, and Welsh Protestants, and 800,000 Papists; whereof one fourth are children unfit for labour, and 75,000 of the remainder are, by reason of their quality and estates, above the necessity of corporeal labour; so as there remains 750,000 labouring men and women, 500,000 whereof do perform the present work of the nation.
>
> "The said 1,100,000 people do live in about 200,000 families or houses, whereof there are about 16,000 which have more than one chimney in each, and about 24,000 which have but one; all the other houses, being 160,000, are wretched, nasty cabins, without chimney, window, or door-shut; even worse than those of the savage Americans, and wholly unfit for the making merchantable butter, cheese, or the manufactures of woollen, linen, or leather.
>
> "By comparing the extent of the territory with the number of people, it appears that Ireland is much underpeopled; forasmuch as there are above ten acres (Irish) of good land to every head in Ireland; whereas in England and France there are

but four, and in Holland scarce one!" — (*Pol. Anatomy of Ireland*, ed. 1719, pp. 114. 118.)

In 1695, Captain South estimated the population at 1,034,102; but it is impossible to say what credit should be given to his statement.

Mr. Dobbs, the second part of whose valuable *Essay on the Trade and Improvement of Ireland* was published in 1731, gives (p. 6.) an account of the number of houses in the kingdom in 1712, 1718, 1725, and 1726. From this account the population has been inferred — supposing 6 inhabitants to belong, at an average, to each house — to have been, in 1712, 2,099,094; and in 1726, 2,309,106.*

Returns obtained through an inquiry instituted by the Irish House of Lords in 1731 make the population of Ireland, in that year, only 2,010,221; but this result is not believed to be entitled to much confidence. It should, however, be observed, that at this period, and for long after, Ireland was essentially a grazing country. To such an extent, indeed, was the pasturage system carried, that, in 1727, during the administration of Primate Boulter, a law was made to compel every occupier of 100 acres of land to cultivate at least 5 acres, under a penalty of 40*s.*!

The following estimates of the population have been made on the basis of returns obtained from the hearth-money collectors, supposing, as before, each house to have, at a medium, 6 inhabitants: —

	Population.		Population.
1754	2,372,634	1777	2,690,556
1767	2,544,276	1785	2,845,932

Since 1785, the population has increased with astonishing rapidity. In 1788 it was estimated, from the hearth-money returns, and other data, by Mr. Parker Bushe, at 4,040,000. In 1805, Mr. Newenham published his *Inquiry into the Population of Ireland*, in which he showed that its increase, during the preceding 20 years, had been great beyond all former precedent; and that there were good reasons for thinking that it then amounted to 5,395,456. An incomplete census was taken in 1813, from which the population was concluded to be 5,937,858. At length, in 1821, a complete census was taken for the first time, when the population was found to be 6,801,827. Another census was taken in 1831: its results, and those of the two preceding ones, may be seen in the following Table. — (See next page.)

Causes of the Increase of Population. — It is obvious, from these statements, that the population of Ireland has increased since 1785 with extraordinary rapidity. The wealth of the country has been, also, no doubt, materially augmented since that epoch; but we doubt whether it has increased in a corresponding proportion. The condition of the great bulk of the people seems to be nearly as depressed

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* There is reason to think that this estimate of 6 inhabitants to a house is not far from the mark; but Mr. Dobbs himself makes no such supposition, his data not being, in his opinion, sufficient to determine it. The writer of the *Preliminary Remarks to the Irish Census of* 1821 should have stated this, when he quoted Mr. Dobbs's authority for the population at the periods referred to.

Table exhibiting the population of Ireland in 1813, 1821, and 1831, according to the Censuses of these Years, and showing the Increase per Cent. in the intervening Periods, and the respective Numbers of Males and Females in 1831.

Counties, &c.	1813.	Increase per Cent.	1821.	1831.			
				Increase per Cent.	Males.	Females.	Total of Persons
Leinster.							
Carlow - - - -	60,566	13	78,952	3	40,149	41,839	81,988
Drogheda town - -	16,123	12	18,118	decrease. 4	8,178	9,187	17,365
Dublin county - -	110,437	35	150,011	increase. 22	82,299	93,713	176,012
city - -	176,610	5	185,881	9	91,557	112,598	204,155
Kildare - - -	85,138	16	99,065	9	54,472	53,952	108,424
Kilkenny county - -	134,164	17	158,716	6	83,090	86,855	169,945
city - -	*	- -	23,330	2	10,887	12,854	23,741
King's County - -	113,226	15	131,088	9	71,287	72,938	144,225
Longford - - -	95,917	12	107,570	4	55,310	57,248	112,558
Louth - - -	*	- -	101,011	7	52,439	55,042	107,481
Meath - - -	142,479	11	159,183	11	88,993	87,833	176,826
Queen's County - -	113,857	17	134.275	8	72,469	73,382	145,851
Westmeath - -	*	- -	128,819	6	67,700	69,172	136,872
Wexford - -	*	- -	170,806	7	87,995	94,718	182,713
Wicklow - - -	83,100	22	110,767	10	61,052	60,505	121,557
Total -			1,757,492	9	927,877	981,836	1,909,713
Munster.							
Clare - - -	160,603	29	208,089	24	128,446	129,876	258,322
Cork county - -	523,936	20	629,786	12	348,402	355,314	703,716
city - -	64,394	56	100.658	6	48,312	58,704	107,016
Kerry - - -	178,622	21	216,185	22	131,696	131,430	263,126
Limerick county - -	103,865	110	218,432	6	123,211	125,590	248,801
city - -	*	- -	59,045	12	30,414	36,140	66,554
Tipperary - -	290,531	19	346,896	16	197,713	204,850	402,563
Waterford county -	119,457	7	127,842	15	72,647	75,586	148,233
city - -	25,467	12	28,679	- -	12,570	16,251	28,821
Total -			1,935,612	14	1,093,411	1,133,741	2,227,152
Ulster.							
Antrim - - -	231,548	13	262,860	19	152,178	164,731	316,909
Armagh - - -	121,449	62	197,427	11	107,521	112,613	220,134
Carrickfergus town -	6,136	30	8,023	8	4,097	4,609	8,706
Cavan - - -	*	- -	195,076	16	113,174	114,759	227,933
Donegal - - -	*	- -	248,270	20	141,845	147,304	289,149
Down - - -	287,290	13	325,410	8	169,416	182,596	352,012
Fermanagh - -	111,250	17	130,997	14	73,117	76,646	149,763
Londonderry - -	186,181	4	193,869	14	106,657	115,355	222,012
Monaghan - -	140,433	24	174,697	11	95,679	99,857	195,536
Tyrone - - -	250,746	4	261,865	15	149,410	155,058	304,468
Total -			1,998,494	14	1,113,094	1,173,528	2,286,622
Connaught.							
Galway - - -	140,995	119	309,599	27	189,204	192,360	381,564
town - -	24,684	12	27,775	19	15.487	17,633	33,120
Leitrim - - -	94,095	32	124,785	12	69,451	72,073	141,524
Mayo - - -	237,371	23	293,112	25	179,595	186,733	366,328
Roscommon - -	158,110	32	208,792	14	123,031	126,582	249,613
Sligo - - -	*	- -	146,229	17	83,730	88,035	171,765
Total -			1,110,229	22	660,498	683.416	1,343,914

SUMMARY.

Counties.	1813.	1821.	1831.			Increase per Cent. on 1821.
			Males.	Females.	Total of Persons.	
Leinster - - -	- -	1,757,492	927,877	981,836	1,909,713	9
Munster - - -	- -	1,935,612	1,093,411	1,133,741	2,227,152	14
Ulster - - -	- -	1,998,494	1,113,094	1,173,528	2,286,622	14
Connaught - -	- -	1,110,229	660,498	683,416	1,343,914	22
Total -	- -	6,801,827	3,794,880	3,972,521	7,767,401	14⅕

* The population of the places marked * is not given in the returns for 1813.

at this moment as at any former period. Their increase, as compared with that of the means of subsistence, has been such as to keep them constantly in poverty, and to prevent them profiting by the wonderful discoveries and improvements of the last half century. We shall briefly notice some of the more prominent circumstances that appear to have conspired to stimulate the progress of population in Ireland since 1785.

1. The Bounty Act of 1783 and 1784 seems to have given the first considerable stimulus. When the efforts of *Grattan* and the volunteers achieved the nominal independence of Ireland, and procured the abolition of those oppressive restrictions with which the narrow jealousy of the British Parliament had fettered her foreign commerce, the Irish Parliament made a powerful effort to stimulate the industry and energies of the people; but, unfortunately, the means resorted to for the accomplishment of this desirable purpose were not of a kind that could be productive of any lasting or real advantage. Instead of contenting themselves with breaking down the restraints under which they laboured, and giving freedom to commerce, they had recourse to all the artificial expedients of the restrictive system. In imitation of the erroneous policy of England, they granted high bounties on the exportation of corn, and other raw produce (3*s.* 4*d.* per barrel on wheat, and other grain in proportion), at the same that they laid prohibitory duties on their importation from abroad. In vain did one or two members urge that, though the bounty system might be apparently beneficial for a few years, it could not be otherwise than injurious in the end. Their feeble and, as it was considered, antinational opposition was drowned amid general acclamations, and measures which have done irreparable mischief to Ireland were hailed with the enthusiastic plaudits of her choicest patriots!

Previously to the passing of the bounty acts (23 and 24 Geo. 3. cap. 19.), Ireland was, as has been already stated, essentially a *grazing* country; but no sooner had they been passed, than the pasturage system began to give place to tillage. The artificial enhancement of prices, caused by the bounty and the restriction on importation, occasioned an immediate and extraordinary increase of cultivation. In proof of this, we subjoin the following *official* account of the number of barrels of barley, oats, and wheat, exported from Ireland in the undermentioned periods: —

Exported from Ireland at an average of the 3 years ended.	BARRELS.			
	Barley.	Oats.	Wheat.	Oatmeal.
25th March 1773	6,445	22,956	2,022	34,825
Do. 1783	19,696	106,570	60,246	25,467
Do. 1789	83,929	323,072	110,337	131,556

In 1784, as at present, there was very little capital in Ireland; and the impossibility, resulting from this circumstance, of finding tenants capable of occupying and cultivating large tillage farms, induced the proprietors to divide their estates into small portions, and even to let them on the ruinous system of *partnership* leases. So that the stimulus that was intended to act exclusively on agriculture had an infinitely more powerful effect in causing the subdivision of farms, and in increasing population.

In 1806, the previously existing restraints on the trade in corn between Great Britain and Ireland were wholly abolished. And, while the markets of England were opened to the free competition of the Irish growers, the high prices obtained during the war continued the impulse originally given by the bounty acts, and occasioned a further and very great extension of tillage. More recently, this impulse has been continued, by the greater facilities afforded by steam navigation to the intercourse between this country and Ireland; the introduction of improved processes, &c.; and, more than all, by the progressive diminution of pasture land, owing to the enormous rents offered for small tillage farms.

2. But the effect of the bounty acts, and of the opening of the markets of England, would have been comparatively trifling, had it not been for the peculiar customs and manners of the people, and the nature of their civil and political institutions. The custom of *gavelkind*, or of equally dividing the paternal property, whether freehold or leasehold, among all the children of a family, has always prevailed among the Irish. Sir John Davies particularly specifies this as one of the customs that had mainly tended to perpetuate the barbarism and poverty of the people; and it still continues to exert a very powerful and disastrous influence.

So long, however, as the rearing of cattle formed the principal employment of the Irish farmers, the custom of *gavelkind*, or the equal partition of property among children, was comparatively harmless; for, as the pasture lands were generally let in immense tracts to opulent graziers, only a few individuals were required to feed and take care of the cattle, and these were not usually permitted to occupy any land. But the passing of the bounty acts gave birth to a new order of things. Even though capital had been as abundant in Ireland as it was deficient, it would have been impossible for a tillage farmer to have managed such large tracts of land as were previously held by single graziers. Not only, however, was the size of the farms greatly reduced, but the new occupiers, being for the most part exceedingly poor, were glad to buy whatever labour they could obtain by granting the peasantry allotments of small pieces of ground, whereon they might erect cabins and raise potatoes. But the stimulus that was thus given to population did not cease (as might, indeed, have easily been foreseen) when a sufficient supply of labourers was obtained to cultivate the country. The habits of idleness and of early marriage, caused by the equal partition of the paternal farm, operate quite as powerfully on the descendants of the occupier of a farm of 50 as of 500 acres. There are, in fact, every where throughout Ireland, innumerable instances of farms of from 300 to 500 acres let, from 40 to 50 years ago, to single tenants possessed of capital sufficient for their cultivation, and now split, perhaps, among 20, 30, or 40 families, by means of the repeated divisions that have taken place in consequence of the death of fathers, the marriage of children, the introduction of sub-tenants, &c. — (For examples of this, see *antè*, pp. 382. 385, &c.)

3. The passion for political influence has always had a powerful sway in Ireland; and since 1792, when Catholics were permitted to exercise the elective franchise, most landlords have split their estates for the purpose of creating voters, and the population has, in consequence, been much augmented.

"The passion for acquiring political influence prevails," says Mr. Wakefield, "throughout the whole country; and it has an overwhelming influence upon the people: to *divide and subdivide, for the purpose of making freeholders, is the great object of every owner of land;* and I consider it one of the most pernicious practices that has ever been introduced into the operations of political machinery. It reduces the elective franchise nearly to universal suffrage, to a population who, by the very instrument by which they are made free, are reduced to the most abject state of personal bondage. * * * The little freeholder is ordered to vote for the object of his landlord's choice, with as little ceremony as the Jamaica planter would direct his slave to the performance of the meanest offices." — (*Account of Ireland*, vol. ii. p. 301.)

The experience of the last few years has shown that the influence of the landlords of Ireland over the voters on their estates was very far, indeed, from being so well established as Mr. Wakefield seems to have supposed. It has been, in fact, diverted, to a great extent at least, into other channels; and this circumstance contributed more, perhaps, than any thing else to facilitate the passing of that part of the Catholic emancipation bill which materially diminished the number of small freeholders.

4. Had there been a compulsory provision for the support of the poor in Ireland similar to what has been long established in England, all the foregoing causes of increased population might have existed without producing the results we have witnessed. Few Irish gentlemen have been able to resist the double temptation to split their estates caused by the desire to extend their political influence, and by the exorbitant rents offered for small patches of land; but had their estates been made liable for the support of these small occupiers and their families and descendants in all time to come, in the event of their becoming infirm, destitute, or unable to support themselves, they would have seen that increased influence and the promise of high rents were not sufficient to countervail such an indefinite responsibility; and would undoubtedly have opposed themselves to the practice of subdivision, and have very soon found means to prevent it. Unfortunately, however, there was no check of this sort in existence, nor any thing, indeed, to oppose the strong tendencies of a contrary kind; so that we need not wonder at the extent to which the process of splitting farms has been carried, or at the swarms of cottiers hutted all over the land.

5. The almost universal dependence placed by the population on the potato has also contributed, and that in no common degree, to increase its numbers. We do not pretend to say, supposing the potato had not been introduced into Ireland, that the population might not have been as poor, compared with the subsistence that would have then been at its disposal, as at present; but there are no

good grounds for thinking that it could have been nearly so large. Potatoes may be raised with very little difficulty, in any quantity, and on almost any species of soil. It appears, too, to be satisfactorily established, that a given extent of land planted with potatoes will support at least double the number of persons that it could do were it planted with wheat or any species of corn, and five or six times the number that it could support were it employed to produce butchers' meat. Hence it is, that a country like Ireland, the great bulk of the people of which subsist almost wholly on potatoes, may have an exceedingly dense population without extensive manufactures, large towns, or any trade save the exportation of raw produce.

Population in Ireland increases fastest in the most backward Provinces. — It will not surprise any one, who has attended to the preceding enumeration of the principal causes of the increase of population in Ireland, to learn that it has been most rapid in those parts of the country that are least improved. Thus, it appears from the previous Table (p. 432.), that while the increase of population in Leinster, during the ten years ending with 1830, was only 9 per cent., it was no less than 22 per cent. in Connaught! Now, it will be remembered that Leinster contains the city of Dublin (the population of which has increased very rapidly since 1820), with Drogheda, Kilkenny, Wexford, Dundalk, and other considerable towns; that it has a good deal of trade and manufacture; and that its agriculture has been materially improved since 1820. But, excepting Galway and Sligo, there is not a considerable town in Connaught; it has no manufactures, or none worth notice; it is, as already stated (*ante*, p. 391—392.), exceedingly questionable whether its agriculture has been, in any degree, improved of late years; nor can there, in fact, be a doubt that the rapid increase of population in it is wholly ascribable to the splitting of the land; and that it is an evidence not of the improvement, but of the deterioration, of the country.

Density of Population. — The Table opposite embodies all the existing information with respect to the density of population in Ireland.

Population of Great Towns. — A comparatively small part of the population of Ireland is resident in great towns; and, with few exceptions, their increase since 1820 has been comparatively slow.

Considering the great extent of bogs in Ireland, the backward state of its agriculture, the deficiency of manufactures and trade, and the fewness of the great towns, its population is astonishingly dense. There is, in fact, at an average of the entire kingdom, an individual for every 2·57 acres; whereas in England, notwithstanding the number and magnitude of her great towns, and the vast amount of her manufacturing and commercial population, there are 2·66 acres for every individual; and in Scotland there is only an individual to every 8 acres! This wonderful density of population in Ireland is entirely ascribable to the interminable division and subdivision of the land, and the general dependence on the potato. But, however it may have originated, there can be no question that it is the immediate cause of the abject poverty and depressed condition of the great bulk of the people. It is not too much to say, that there are at present more than double the number of persons in Ireland it is, with its existing means of production, able either fully to employ or to maintain in a moderate state of comfort.

Table showing the Number of English Statute Acres, exclusive of Lakes, in each of the Provinces and Counties of Ireland; the Numbers of Persons, Families, and Inhabited Houses in each, according to the Population Returns of 1831; the Number of Acres corresponding to each Person, Family, and Inhabited House; and the Number of Persons corresponding to each Family and House.

Provinces and Counties.	Number of Acres.	Number, per Population Returns of 1831.			Number of Acres corresponding to			Number of Persons corresponding to	
		Persons.	Families.	I. Houses.	Each Person	Each Fam.	Each House	Each Fam.	Each House
LEINSTER.									
Carlow - -	219,863	81,988	14,609	13,275	2·681,649	15·049,832	16·562,185	5·612,157	6·176,121
Dublin - -	248,631	380,167	72,029	39,861	654,005	3·451,818	6·237,450	5·277,971	9·537,317
Kildare - -	392,435	108,424	18,771	17,155	3·619,448	20·906,451	22·875,838	5·776,144	6·320,256
Kilkenny - -	513,686	193,686	33,608	31,007	2·652,159	15·284,635	16·566,775	5·763,092	6·246,525
King's - -	527,918	144,225	26,072	24,256	3·660,378	20·248,466	21·764,429	5·553,180	5·945,952
Longford - -	247,753	112,558	20,438	19,418	2·201,114	12·122,174	12 758,935	5·507,290	5·796,581
Louth - -	206,261	124,846	23,595	22,040	1·652,212	8·741,725	9·358,485	5·291,206	5·664,519
Meath - -	567,127	176,826	31,632	29,796	3·207,260	17·928,901	19·033,662	5·590,099	5 934,555
Queen's - -	396,810	145,851	25,403	23,783	2·720.653	15·620,596	16 684,607	5·741,487	6·132,574
Westmeath -	369,917	136,872	25,331	23,803	2·702,649	14·603,332	15·540,772	5·403,340	5.750,200
Wexford - -	564,479	182,713	32,856	29,923	3·089,430	17.180,393	18·864,385	5·561,024	6·106,106
Wicklow - -	494,704	121,557	19,970	18,412	4·069,729	24·772,359	26·868,564	6·086,980	6·602,063
Totals -	4,749,584	1,909,713	344,314	292,729					
Averages -	- -	- -	- -	- -	2·487,066	13·794,338	16·225,191	5·546,428	6·523,825
MUNSTER.									
Clare - -	783,697	258,322	43,374	40,358	3·033,799	18·068,359	19·418,628	5·955,688	6·400,763
Cork - -	1,769,563	810,732	138,307	118,879	2·182,673	12·794.457	14·885,413	5·861,829	6·819,808
Kerry - -	1,134,051	263,126	45,024	41,294	4·309,916	25·187,700	27·462,851	5·844,128	6·372,015
Limerick - -	674,783	315,355	52,847	44,801	2·139,757	12·768,615	15·061,784	5 967,321	7·039,017
Tipperary -	1,001,845	402,563	66,308	60,264	2.488,666	15·108,961	16·624,270	6·071,108	6·679,991
Waterford -	471,281	177,054	30,191	24,848	2 661,792	15 609,983	18·966,556	5·864,463	7·125,483
Totals -	5,835,220	2,227,152	376,051	330,444					
Averages -	- -	- -	- -	- -	2·620,036	15·517,097	17·658,725	5·922,473	6·739,877
ULSTER.									
Antrim - -	709,076	325,615	61,656	55,971	2·177,652	11·500,519	12·668,632	5·281,157	5·817,566
Armagh - -	309,789	220,134	41,176	39,571	1·407,275	7·523,533	7·828,688	5·346,173	5·563,013
Cavan - -	451,462	227,933	40,338	38,917	1·980,679	11·191,978	11·600,637	5·650,578	5·856,901
Donegal - -	1,165,107	289,149	52,739	50,171	4·029,435	22 091,943	23·222,718	5·482,641	5·763,270
Down - -	611,246	352,012	66,233	62,629	1·736,435	9·228,723	9·759,792	5·314,752	5·620,591
Fermanagh -	422,551	149,763	28,132	25,781	2·821,465	15·020,297	16·390,020	5·323,582	5·809,045
Londonderry -	508,705	222,012	41,239	39,077	2·291,340	12·335,532	13·018,016	5·383,545	5·681,398
Monaghan -	319,204	195,536	36,766	35,225	1·632,456	8·682,043	9·061,859	5·318,392	5·551,057
Tyrone - -	727,134	304,468	57,035	54,663	2·388,212	12·748,909	13·302,124	5·338,266	5·569,910
Totals -	5,224,274	2,286,622	425,314	402,005					
Averages -	- -	- -	- -	- -	2·284,712	12·283,332	12·995,544	5·376,314	5·688,043
CONNAUGHT.									
Galway - -	1,432,670	414,684	72,244	67,114	3·454,848	19.830,990	21·346,813	5·740,048	6·178,800
Leitrim - -	394,807	141,524	25,481	24,200	2·789,682	15·494,172	16·314,339	5·554,099	5·848,099
Mayo - -	1,297,108	366,328	65,207	62,367	3·540,838	19·892,159	20·797,986	5·617,924	5·873,747
Roscommon -	584,618	249,613	44,252	41,369	2·342,098	13 211,109	14·131,789	5·640,717	6·033,818
Sligo - -	425,928	171,765	32,203	29,588	2·479,714	43·226,345	14·395,295	5·333,820	5·805,225
Totals -	4,135,131	1,343,914	239,387	224,638					
Averages -	- -	- -	- -	- -	3·076,931	17·273,832	18·407,976	5·613,980	5·982,576
General Total -	19,944,209	7,767,401	1,385 066	1,249,816					
Average number of acres and persons corresponding to each person, family, and house, in Ireland - -					2·567,681	14·399,464	15·957,716	5·607,964	6·214,835

Population of the principal Cities and Towns of Ireland in 1821 and 1831; showing the Ratio of their Increase, with the Number of Inhabited Houses in each in 1831, and the average Number of Persons to a House.

Cities and Towns.	Population, 1821.	Increase per cent.	Population, 1831.	Inhabited Houses. 1831.	Persons to a House.
Dublin (county of city) - -	185,881	9·831	204,155*	16,042	12·725,969
Cork (do. do.) - - - - -	100,658	6·316	107,016	11,986	8·928,416
Limerick (do. do.) - - -	59,045	12·717	66,554	7,820	8 510,741
Belfast - - - - -	37,277	42·948	53,287	7,750	6·875,746
Galway (county of town) - -	27,775	19·243	33,120	4,606	7·190,620
Waterford (county of city) -	28,679	495	28,821	3,614	7·974,820
Sligo - - - - - - -	14,151	7·073	15,152	2,361	6·417,619
Londonderry (and liberties) -	16,971	15·609	19,620	2,822	6·952,515
Kilkenny (county of town) - -	23,230	2·199	23,741	3,759	6·315,775
Wexford - - - - - -	10,580	879	10,673	1,713	6·230,589
Kinsale - - - - - -	7,068	3·452	7,312	967	7·561,530
Carlow - - - - - -	8,035	23·385	9,914	1,351	7·338,267
Drogheda (county of town) -	18,118	- -	17,365	3,206	5·416,406
Dundalk - - - - - -	9,256	8·882	10,078	1,618	6·228,677
Cove (Cork harbour) - - -	6,508	7.037	6·966	781	8·919,334
Youghal - - - - - -	8,969	7·124	9,608	1,209	7·946,236
Bandon - - - - - -	10,179	- -	9,917	1,436	6·905,988
Killarney - - - - - -	7,014	12·774	7,910	936	8·450,854
Clonmell - - - - - -	15,590	- -	15,134	1,793	8·440,602
Carrick on Suir - - -	7,466	23·573	9,226	1,614	5·716,232
Armagh - - - - - -	8,493	11·503	9,470	1,372	6·902,332
Athlone - - - - - -	7,543	51·213	11,406	1,764	9·465,986
Tralee - - - - - - -	7,547	26·778	9,568	1,218	7·855,500
Thurles - - - - - -	6,040	17·284	7,084	1,155	6·133,333
Nenagh - - - - - -	6,335	33·638	8,466	1,282	6·603,744
Newry - - - - - -	10,013	30·480	13,065	1,992	6·558,734
Totals -	648,421	- -	724,628	86,167	
Average rate of increase and the average number of Inhabitants to a house - - - -	- -	11,752	- -	- -	8·409,576

Registers of Births, Marriages, and Deaths. — These are in a still more deplorable state in Ireland than in Scotland; and, as the legislature knew this, no provision was made, under the acts for taking the census in Ireland, for obtaining returns from the ministers of churches and chapels. We have not, therefore, any information of any sort to lay before the reader under this head. It is, however, to be hoped that measures may be speedily taken for supplying so important a desideratum, by providing for the registration of all births, marriages, and deaths.

Ages. — The following account of the ages of the people of Ireland was obtained under the census of 1821: —

Summary of Ages of Persons in Ireland in 1821.

Ages.	Leinster.	Munster.	Ulster.	Connaught.	Total.
5 and under - - -	264,491	301,809	295,366	178,999	1,040,665
5 to 10 years - - -	228,084	272,202	263,127	157,344	920,757
10 15 - - - -	208,581	235,256	248,956	135,113	827,906
15 20 - - - -	200,811	238,752	250,084	138,646	828,293
20 25 - - - -	326,998	335,678	343,009	189,793	1,195,478
30 40 - - - -	206,383	231,501	215,374	127,498	780,756
40 50 - - - -	142,846	142,450	159,166	79,885	524,347
50 60 - - - -	106,855	112,755	123,027	65,818	408,455
60 70 - - - -	48,788	45,535	65,835	25,324	185,482
70 80 - - - -	16,598	15,215	24,659	8,528	65,000
80 90 - - - -	3,627	2,742	5,733	1,677	13,779
90 100 - - - -	534	452	669	308	1,963
100 and upwards - - -	62	89	94	104	349
Unascertained - - -	2,834	1,176	3,395	1,192	8,597
Totals -	1,757,492	1,935,612	1,998,494	1,110,229	6,801,[illegible]7

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* This comprises the population of Dublin as contained within its ancient boundary. Including its various suburbs, in contained, in 1831, 265,316 inhabitants.

SECT. IV. — *Population of the Empire.*

IT may now be useful to bring into one point of view the following details with respect to the population of the empire: —

Summary Account of the Population of Great Britain and Ireland, including the Army and Navy, at the Periods at which Censuses have been taken, with the Ratio of Increase in the intervening decennial Periods.

	Population, 1801.	Inc. per cent.	Population, 1811.	Inc. per cent.	Population, 1821.	Inc. per cent.	Population, 1831.		
							Males.	Females.	Total.
GREAT BRITAIN									
England - -	8,331,434	14⅝	9,551,888	17⅞	11,261,437	16	6,376,627	6,714,378	13,091,005
Wales - -	541,546	13	611,788	17	717,438	12	394,563	411,619	,806,182
Scotland - -	1,599,068	14	1,805,688	16	2,093,456	13	1,114,816	1,250,298	2,365,114
Army, Navy, &c.	470,598	-	640,500	-	319,300	-	- -	- -	277,017
	10,942,646	15½	12,609,864	14	14,391,631	15	8,163,663	8,376,295	16,539,318
IRELAND - -	- -		- -		6,801,827	14¼	3,794,880	3,972,521	7,767,401
Totals - -	- -		- -		21,193,458	15	11,958,503	12,348,816	24,306,719
Population of Jersey, Guernsey, Man, &c. not included in the above.	- -		- -		- -		- -	- -	103,710
Total population of the empire in 1831 - -	- -		- -		- -		- -	- -	24,410,429

It appears from this statement that the population of Great Britain increased, during the first 30 years of the present century, at the rate of about 15 per cent. each 10 years, or of 1½ per cent. a year, A ratio of this sort is not easily changed, and there is no reason to think that it has been sensibly affected since 1830. On this hypothesis, the population must have increased during the interval at the rate of about 248,000 a year (1½ per cent. on 16,539,318), and must consequently, have amounted, on the 31st of May, 1838, to about 18,275,000.

The population of Ireland increased, during the 10 years preceding 1831, at nearly the same rate as the population of Great Britain. We believe that there, also, no great change can have taken place during the intervening period; and that the population may be fairly supposed to have increased since 1830 at the rate of about 165,000 a year (1·45 per cent. on 7,767,401); and if so, it would amount on the 31st of May, 1838, to about 8,922,000.

Hence, if we be right in these suppositions, the entire population of Great Britain and Ireland would, on the 31st of May, 1838, be about 27,197,000. And including the islands of Jersey, Guernsey, Man, &c., it may be taken at 27,300,000.

It results from these statements, that the British islands rank as the fourth state in Europe in point of population, being surpassed only by Russia, France, and Austria. Our population is nearly double that of the powerful and flourishing kingdom of Prussia.

PART III.

INDUSTRY OF THE BRITISH EMPIRE.

Having described in the previous parts of this work the physical circumstances, civil divisions, &c., and given an account of the population of Great Britain and Ireland, we now proceed to lay before the reader some details with respect to the principal branches of industry carried on in them. We begin with agriculture, the first and most important of the useful arts.

Chapter I.—Agriculture.

Sect. I.—*State of Property in England and Wales.—Size of Estates, &c.*

Tenures.—The tenures under which land is held in this country have grown out of the feudal system, and have differed materially at different periods of our history. At present landed property is of three sorts,—*freehold*, *copyhold*, and *leasehold*. An estate belonging unconditionally to its owner, and held by him directly under the Crown, or rather, under the law and constitution of the country, is said to be freehold. But freehold property may be liable to regular and fixed annual payments, provided it be not liable to fine, heriot, or forfeiture. Copyhold estates are held of a subject as part of a royalty, honour, or manor, and are liable to fines on account of deaths, transfers, and other such circumstances, according to the customs of the royalty, honour, or manor of which they form a part. Leasehold property is of various descriptions, such as long leasehold, as for 1,000 years: life leasehold with a fine certain, or under certain limitations on renewal: life leasehold with an uncertain fine, payable to the proprietor or other superior; in this case, the latter reserves merely a conventional rent, the tenant having paid down a sum of money to obtain the lease and the right of alienation; this practice is common in the West of England. There is another kind of leasehold with an uncertain fine, payable to the proprietor, who receives the full rent of the land at the time of granting the lease, the lessor having a power of alienation; this is a common practice in Wales and some parts of England. The last species of leasehold property, is leasehold for an ordinary term with the power of alienation. A lease without the power of alienation, or transfer, is not called a tenure. But though it merely gives a right of occupancy for some specified period, it is practically one of the most important tenures; much of the prosperity of every country, of which any considerable portion belongs to extensive proprietors, depending on the conditions in such leases.—(See *post.*)

Magnitude of Estates.—Number of Proprietors, &c.—Estates vary exceedingly in size and value in most parts of England. The largest estate in the kingdom may be worth 100,000*l.* or upwards a year; and there are estates of most inferior degrees of magnitude, down to the annnual value of 40*s.*! In some counties property is more, and in others it is less subdivided. In Cheshire, the East Riding of Yorkshire, and one or two other counties, there are comparatively few small proprietors; but the latter predominate in most parts of the West of England, in the North, and generally throughout the country. On the whole, we believe it may be safely affirmed, that by far the largest portion of the kingdom is parcelled into properties of less than 1,000*l.* a year. It is not difficult to account for the prevalent misconceptions on this point. Though few in number, the owners of large estates engross the attention of common observers, and hinder them from fixing their eye on the mass of obscure, petty landowners that constitute the great bulk of the class. Dr. Beeke, whose authority as to such matters is deservedly high, estimated the total number of proprietors in England and Wales at 200,000; and supposing the gross rental of the kingdom to be 30,000,000*l.* a year, the average annual income of each, in his capacity of landlord, will be only 150*l.*! and seeing that a few have much more, it follows that many must have good deal less. Hence it is that few lead a more laborious life, or are more under the necessity of abstaining from luxurious indulgences, than the owners and occupiers of small landed properties. — (See *ante*, p. 186, &c.) Nothing, in fact, can be a greater mistake, than to suppose, as is generally done, that the landowners are an extremely opulent, and an extremely indolent body. These may be the characteristics of a few individuals amongst them; but it would be quite as wide of the mark to affirm that they are generally applicable to the entire class, as that they are generally applicable to the classes of manufacturers and traders.

Estates of the larger class are, in general, managed by stewards. Much, of course, must depend on the judgment with which they are selected. They should not only be thoroughly conversant with all the most approved principles and processes of arable and stock husbandry, but with accounts, and the laws as to leases, public burthens, the poor, &c. On the whole, we believe that the stewards of England, though inferior, perhaps, to the factors of Scotland, are a highly respectable, well-informed, and useful body of men.

SECT. II. — *Division of the Kingdom into Agricultural Departments, — Size of Farms. — Conditions in Leases. — Buildings and Fences, &c.*

Agricultural Departments. — Exclusive of Wales, England may, in an agricultural point of view, be divided into 6 departments or districts: meaning by an agricultural district, a tract distinguished by uniformity or similarity of management, whether it be applied to grazing, sheep-farming, or arable or mixed husbandry; or by the production of some particular article, as dairy produce, fruit-liquor, &c. The 6 agricultural departments, distinguished from each other in this point of view, are the northern, western, midland, eastern, southern, and south-western.

The northern district includes the principal part of Northumberland and Durham, the whole of Cumberland, Westmoreland, Lancashire, and York (excepting the fens and marshes bordering on Lincoln), with parts of Cheshire, Stafford, and Derby. This department is distinguished by a coldness of climate and backwardness of seasons, as compared with the more southern parts of the island; but its mountains form its most striking natural feature. In respect of rural economy, it is also strongly distinguished from the other districts. On its western side, indeed, manufactures prevail over agriculture; but on its eastern side all the branches of the latter flourish. It would not be easy to point out any portion of the kingdom in which greater agricultural skill and industry are displayed, than in the eastern parts of Northumberland, and on the banks of the Tees.

The western department extends from the Mersey to the banks of the Somersetshire Avon; being bounded on the west by the Welsh mountains; on the east, by the lower hills of Staffordshire, and the uplands of Warwickshire and Oxfordshire; and on the south, by the chalk hills of Wiltshire, and Sedgmoor, in Somersetshire. It consists of a nearly uninterrupted succession of vale districts, including the basins of the Severn, the Avon, the Dee, and the Mersey. It is also distinctly marked by its agricultural produce; as almost the whole of it, with the exception of the high lands of Shropshire and Herefordshire, the Cotswold Hills in Gloucestershire, and the Mendip Hills in Somersetshire, may be said to be devoted to the dairy. It is further distinguished by its fruit-liquor, or cyder.

The extent lengthwise of the midland department is determined by the mountains of the northern, and the chalk hills of the southern departments; and its breadth, by the rising grounds which separate it from the western department, and the marshes which form the commencement of the eastern department. Compared with the great variety of soil and surface exhibited by the other departments, this may be regarded as a widely extended fertile plain, without a single eminence, except the Charnwood Hills. In an agricultural point of view, it is distinguished by its mixed cultivation, for which the nature of its soil and surface render it almost uniformly suitable. "As a wide field of agriculture (to use the words of Mr. Marshall), in which every branch of the profession is highly cultivated, it has been long known. Here not only the spirit of improvement, but of enterprise, may be said to inhabit. The art, science, and mystery of breeding has here been carried to a height, which, in any other country, probably it has never attained; the same enterprising spirit which led to this pre-eminence still continuing with little or no abatement."

The eastern department is strongly marked both in its natural and its agricultural character: in the former, by its fens and marshes, and its light sandy uplands; and in the latter, by its superior and extensive turnip husbandry. The pursuits of the farmers of this department are particularly directed to grazing, not only in the marshes and lower grounds, but on the uplands. Arable husbandry is also very intimately connected, throughout a considerable portion of this district, with the fattening of sheep and cattle. Its boundaries are distinctly marked, including the fen lands of Lincoln, Northampton, Cambridge, Huntingdon, and Norfolk, with the rest of Norfolk, the counties of Suffolk and Essex, and those parts of the adjoining counties which lie close to them.

The natural character of the southern department is sufficiently marked by its including the chalk hills in the vicinity of the metropolis, as well as those in the more remote counties. The objects of the husbandry of that part of it which lies in the more immediate neighbourhood of London, depend, of course, upon the demands of its population, and are, therefore, very various. The more remote parts of this district are distinguished by flocks of sheep, fed on the chalk hills; the breeds of which, and their mode of management, differ much from those in the midland and eastern departments.

The situation of the last, or south-western department, is peculiar; it stretches away from the main body of the island, in a peninsular form, into the Atlantic. This peninsula is nearly 200 miles long, and is bounded on all sides by the ocean, except where it touches the southern and western departments. Its natural characters are also singular. It abounds in slate-rock hills, which are comparatively unknown in the rest of the kingdom, except in a small portion of the northern department. Its surface, too, with the exception of the north-eastern angle, has a peculiar character, consisting of bare steep-sided hills, separated by narrow valleys; the hills being, in general, productive to their very summits. Its agricultural character and pursuits are not less remarkable; the husbandry carried on in it being more nearly allied to that of ancient Rome, than any practised in any other part of the island. Arable, as well as pasture and dairy husbandry, are pursued; but the way in which they are united, the practices that prevail in each, and their more prominent features, are peculiar, and strongly distinguished.

Besides this general division of the kingdom into agricultural departments, it may be proper to specify the counties principally devoted to the three great branches of agricultural industry, that is, to tillage; the dairy; and the breeding and fattening of cattle and sheep.

Tillage, or arable husbandry, is pursued to the greatest extent in Kent, Essex, Suffolk, Norfolk, Hampshire, Berkshire, Bedfordshire, Surrey, Sussex, Hertfortshire, part of Yorkshire, part of Lincoln, Durham, and Northumberland. The principal dairy counties, whether for butter or cheese, or both, are Cheshire, Salop, Gloucester, Wilts, Buckingham, Essex, Suffolk, York, Derby, Cambridge, Dorset, and Devon. Lincoln, Somerset, Leicester, Northampton, Teeswater in Durham, and Cleveland and Holderness in York, are the counties and districts most distinguished for breeding and fattening cattle and sheep. It will be evident, however, that in most of the counties thus specified, more than one of the three great divisions of agricultural industry, and sometimes all, are carried on. In some counties, arable husbandry is closely connected with the fattening of sheep, but seldom with the dairy husbandry; while the latter is often connected with breeding and fattening.

Wales. – Considered as an agricultural district, Wales is chiefly distinguished, as compared with England, by its mountainous surface, and by the greater moisture of its climate. The mountains and wastes are principally depastured by sheep and lean cattle. The valleys and low grounds are generally devoted to a mixed system of husbandry, or to tillage, breeding, and the dairy. Generally speaking, agriculture is at a lower ebb in Wales than in any other district of Great Britain.

We shall now proceed briefly to notice, 1st, the size of farms; 2d, the conditions under which they are mostly held; 3d, the buildings and fences; and, 4th, the principal implements employed in husbandry. The rotation of crops, and the species of crops commonly cultivated, will form the subject of next section.

1. *Size of Farms.* — A great deal of discussion has taken place as to the proper size of farms. This, however, is not a point as to which it is possible to come to any very precise conclusions. Much must obviously depend on the purposes to which farms are to be applied. Such as are wholly employed in pasture may be very much larger than those that are to be employed partly only in that way, or partly in tillage; and the latter again than those that are to be wholly employed in tillage. And in regard to tillage farms, it is plain that their size must depend on various circumstances, but principally, perhaps, on the amount of the tenant's capital. But supposing that those offering for farms have sufficient capital, their size ought to be mainly determined by considering what extent of land an individual may be able to manage in the best and most approved manner. Most practical farmers in this country seem to think that this size might run from 400 to 600 acres, or 500 at a medium. This conclusion has, however, been strongly denied; and it has been contended that the public interests are best consulted by letting land in small farms, or in farms of from 15 to 30, 40, or 50 acres. To enter fully into an examination of this question, would encroach too much on our limits. But the opinions of the great majority of those who, from their acquaintance with agriculture, are best entitled to decide as to such matters, are exceedingly hostile to the small farming system; and their objections to it seem to be founded on the soundest principles, and to be consistent with the most extensive experience. It is plain that that system of occupation must, under all ordinary circumstances, be the best which gives the greatest scope to improvement, which allows of the division of labour being carried to the furthest extent, and which puts it into the power of the occupier to avail himself of every new improvement, and increased facility of production. But it is almost superfluous to say that these objects can only be attained, when land is occupied by large and opulent farmers. "Where," asks Arthur Young, "is the little farmer to be found who will cover his whole farm with marl at the rate of 100 or 150 tons per acre? who will drain all his land at the expense of 2*l.* or 3*l.* an acre? who will pay a heavy price for the manure of towns, and convey it 30 miles by land carriage? who will float his meadows at the expense of 5*l.* per acre? who, to improve the breed of his sheep, will give 1,000 guineas for the use of a single ram for a single season? who will send across the kingdom to distant provinces for new implements, and for men to use them? who will employ and pay men for residing in pro-

vinces, where practices are found which they want to introduce into their farms? At the very mention of such exertions, common in England, what mind can be so perversely framed, as to imagine for a single moment, that such things are to be effected by little farmers? *Deduct from Agriculture all the practices that have made it flourishing in this island, and you have precisely the management of small farms.*" — (*Travels in France*, 2d. ed. vol. i. p. 410.) Besides, though it were admitted that small farmers might accumulate capital, which, however, is not the case in one instance out of a hundred, they could not apply it in the most efficient manner. "The division of labour, which in every pursuit of industry gives skill and despatch, cannot take place on the greatest farms in the degree in which it is found in manufactures; but upon small farms it does not take place at all. The same man, by turns, applies to every work of the farm; upon the larger occupation there are ploughmen, thrashers, hedgers, shepherds, cow-herds, ox-herds, lime-burners, drainers, &c. This circumstance is of considerable importance, and decides that every work will be better performed on a large than on a small farm. One of the greatest engines of good farming, a sheepfold, is either to be found on a large farm only, or at an expense of labour which destroys the profit." — (*Travels in France*, vol. i. p. 409.)

It is of importance, too, as connected with this question, to observe, that small farms do not afford sufficient employment for their occupiers, except, perhaps, during seed-time and harvest. But when a country is so parcelled out, the occupiers of one farm, though they may have nothing to do at home, cannot go elsewhere to seek for work. In consequence, they contract indolent and most commonly, also, dissipated habits; and become incapable of that continuous and vigorous exertion that is natural to those that live in districts where there is a proper distribution of employments.

The example of the crofters, or occupiers of small farms, in the Highlands of Scotland, and of the cottiers of Ireland, may be quoted in proof of what is now stated. They are incurably idle; and have all the vices, with but few of the virtues, of civilisation. "The families of cottiers," says an undoubted authority, "are universally in rags, and their children are uneducated; *industry is unknown to them*, and their habitations are filthy in the extreme. The labour which is required for small farms, occupies but a small portion of the time of the tenants; but they are so perversely indolent and careless, that while the people from other districts are employed in fishing, making kelp, &c., and receiving high wages, none of them can be engaged for such labour." * And Mr. Wakefield states that in Ireland, though the whole dependence of the cottier population be on the potato crop, their indolence is such, that they frequently allow the potatoes to remain in the ground till they be injured, or, it may be, destroyed by frost! — (*Account of Ireland*, vol. i. p. 517. and 583.)

It is needless to waste the reader's time by entering into any lengthened statements, to show the fallacy of the complaints made against large farms, on the ground of their being unfavourable to population. The truth is, that they are distinctly and completely the reverse. The improved and skilful management carried on upon large farms, occasions the production of a much greater quantity of produce; and it is needless to say, that whatever has this effect, is, instead of being unfavourable, highly favourable to population. It is true, perhaps, that a large farm, managed according to the best principles, may not employ, or rather keep, so many people as if it were split into smaller portions; but the large surplus obtained from such a farm, and which goes partly to the landlord as rent, and partly to the farmer as profit, is not retained by them; they exchange it for the various products of art and industry, for which they have occasion; so that, in this way, population is increased proportionally to the increased produce of the land, at the same time that labour is properly distributed, that indolence and apathy are banished, and that a provision is made for the successful prosecution of all those arts that improve and embellish society.

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* *Survey of Ross and Cromarty*, by *Sir George Mackenzie*, p. 84. 257.

Nothing, therefore, can be a greater mistake than to suppose that the well-being of a country is promoted by dividing its lands into minute portions, and covering them with cottages. We believe, indeed, that hardly any thing can happen to it that is, in all respects, so destructive of its best interests.*

In England, farms seem to be, generally speaking, of a medium size. In Northumberland, Norfolk, Suffolk, Essex, the downs of Wiltshire, Dorsetshire, Hampshire, &c., and the wolds of Lincolnshire and Yorkshire, there are some very large farms; but even in these counties, and generally throughout the kingdom, the number of small and middle-sized farms preponderates very decidedly. According to the numerous minutes taken by Arthur Young, in his *Tour through the Northern Counties in* 1769, the average size of farms in them appears to have been 287 acres†; and, probably, this is not far from their size at present; for though in several instances small farms have been consolidated, some of the very large Northumbrian farms, included in Mr. Young's average, have been subdivided in the interim. According to the averages taken by Mr. Young in his *Eastern Tour* (vol. iv. p. 381.), excluding 9 very large sheep farms, principally in Dorsetshire, the medium size of farms would appear to have been 342 acres. But the number of instances taken were not sufficiently numerous, to warrant our depending on the conclusion drawn from them. There can be no doubt, indeed, that this is very much above the present average size of farms in the district in question; and we believe that such, also, was the case when Mr. Young made his tour.

According to the returns collected under the late Population Act, it appears that, in 1831, there were in England only 141,460 individuals occupying land who employed labourers, and 94,883 who did not employ labourers, making together 233,343; which, as the entire area of England, excluding Wales, is 32,247,680 acres, gives $\left(\frac{32,247,680}{233,343}\right)$ 136½ acres for the average size of farms throughout the kingdom.

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* See this subject treated at greater length in the art. *Cottage System*, in the new edition of the *Ency. Britannica.*

† *Northern Tour*, 2d. ed. vol. iv. p. 195.

But this result cannot be depended on. Many individuals occupy villas with a few acres of land attached to them, carrying on business at a distance, perhaps in another parish. This is the case to a great extent round the metropolis; and in the vicinity of the great manufacturing and commercial towns in the North. There are also great numbers of individuals occupying houses and small patches of land in all parts of the country, who derive their principal means of subsistence from the interest of money in the funds or elsewhere, half pay, profits of canals, or other public works, and so forth. None of these persons belong, properly speaking, to the agricultural class; but they are all occupiers of land; and would, we suppose, uniformly be, and we know sometimes were, classed as such. A very considerable number of the small occupiers are in a somewhat similar predicament; carrying on other businesses on which they mainly depend; and having a very doubtful claim to be called occupiers. It is impossible to say what deduction should be made from the numbers in the returns to get at the number of those who are really farmers, — that is, of those who make farming their sole or principal pursuit. No doubt, however, it would be very considerable; and would probably increase the average size of farms to 150 or 160 acres.

Hence, as already stated, farms in England may be truly said to be of a middle size. And it is to be hoped that no circumstances may ever occur to occasion their diminution, or to realise, in any degree, the pernicious theory of those who suppose, in the teeth of principle and of fact, that countries are improved by being split into small portions.

2. *Occupancy of Land by Tenants.* — *a. Advantage of Leases.* — There is no single circumstance, perhaps, on which the prosperity of agriculture, and the well-being of the rural population, is so much dependent, as on the nature of the contract entered into between landlords and those who occupy their estates. The interests of the parties, though in many respects the same, are in others materially different. The one has a permanent, the other only a temporary, interest in the land. The landlord is anxious that his estate should not be deteriorated during the period it is occupied by another, but that, on the contrary, it should be improved and rendered more valuable: the occupier, however, has no such anxiety; and, speaking generally, his principal or sole object is to make the most of the land during the period he occupies it, without caring about its state when he leaves it. Hence the grand desideratum in contracts of occupancy should be to provide as much as possible for the interests of both parties: by taking care that the land shall not be deteriorated, and that the tenant or occupier shall have every inducement to introduce improvements, and to cultivate the farm in the most approved manner. The difficulty is to find the means of combining these advantages; that is, of affording sufficient protection to the landlord without fettering the enterprise of the tenant, or lessening his ability or inclination to lay out capital, and to avail himself of new discoveries. But this difficulty is not insuperable; and the granting of leases of a reasonable length, and under proper conditions as to rent and management, seems to be well calculated to promote alike the interests of the landlords, the occupiers, and the public.

The plan of letting lands on lease for a number of years certain is so obviously superior to every other, that little need be said in its recommendation. Where a tenant is secured in the possession of his farm for a fixed and reasonable period, he has every inducement to exert himself, and to apply whatever capital and skill he may possess to its improvement. But a tenant at will, or a tenant who may be turned out of his farm at any time, without having any grounds for affirming that he has been ill-treated, dares not venture upon any outlay. Such a tenant is really, in so far as the business of farming is concerned, destitute of the security of property. Having no guarantee that he will be allowed to occupy his farm for a period sufficient to enable him to reap the advantage of improvements, he never once thinks of undertaking any. He moves on in the accustomed routine of the district to which he belongs; and should he be so fortunate as to accumulate a little capital, which is but seldom the case, he either employs it in some other business, or in taking a greater extent of land: but he scrupulously abstains from laying out any thing on improvements, unless they happen to be such as promise an almost immediate return. There can, therefore, be no question, that the granting of leases for a fixed and reasonable number of years is of the utmost consequence to agriculture; and those best acquainted with the business affirm, that it has done more for its improvement than all the other encouragements that have been given to it.

The term "tenants at will" is sometimes, but improperly, applied to tenants who have no leases, but who, notwithstanding, either from the custom of the estate or district, or the promises of the landlord, have a tolerable security that they will not be capriciously ejected, and that their rents will not be raised immediately upon their making an improvement. Still, however, the security afforded by such a tenure is very far short of what is afforded by a lease. Where the rights of both parties are not clearly defined, disputes may unintentionally arise: the tenant is in such cases kept in a state of degrading dependency upon his landlord; and, however well he may be treated by the individual now in possession of the estate, he cannot foretell what may be the views and objects of his successors. And hence, as Mr. Loudon has justly observed, "no prudent man will ever invest his fortune in the improvement of another person's property, unless, from the length of his lease, he has a reasonable prospect of being reimbursed with profit: and the servility which a holding at will necessarily exacts, is altogether incompatible with that spirit of enterprise which belongs to an enlightened and independent mind." — (*Encyc. of Agriculture*, p. 699.)

There are but few tenants at will, properly so called, in England; the tenants to which this designation is applied, being, in fact, tenants from year to year. In this latter species of tenancy, the landlord and occupier are respectively bound to give half a year's notice before either party can put an end to the tenancy; whereas tenancy at will may be terminated at any time by either party without notice. — (*British Husbandry*, vol. i. p. 60.)

b. Conditions as to Management. — Much difference of opinion has existed as to the expediency of inserting conditions in leases with respect to management. Those who are adverse to such conditions argue, that, being generally framed by the landlord, whose knowledge of the practical business of farming is seldom very accurate or extensive, they are exceedingly apt to proceed on mistaken views, and are, for the most part, either vexatious or impossible; that the strict observance of conditions can rarely be enforced; that, if it were, it would reduce the occupiers to the condition of mere machines; that it would prevent them from taking advantage of such discoveries as might be made during the currency of their leases; and that, having no means of escaping from the prescribed mode of management, they would cease to interest themselves in the progress of agriculture, and would become indifferent to every sort of improvement.

But these objections, though enforced by some high authorities, are really entitled to very little weight. Conditions as to management may not always be framed in the most judicious manner; but they are universally almost sufficient to hinder the tenant from overcropping or exhausting the farm previously to the termination of the lease; and this is quite enough to recommend them. In East Lothian, Berwickshire, Northumberland, and all the best cultivated counties, leases invariably contain regulations as to the rotation of crops, and the proportion of the farm to be appropriated to culmiferous crops, green crops, grass, &c.; and, instead of its being true that these regulations have cramped the enterprise of the tenants, these are the very counties in which agriculture is in the highest state of advancement, and in which every new improvement is soonest introduced and tried.

In many parts of England leases are almost entirely unknown, and it is believed that the practice of granting them is on the decline. This is, no doubt, one of the main causes of the backward state of agriculture in several very extensive districts. Tenants at will, or from year to year, never think, upon so uncertain a tenure, of making any expensive improvements, or of leaving their accustomed routine; and vicious practices are thus frequently followed in some counties, that have been abandoned in others for more than half a century. In fact, a tenant at will is, in most cases, rather anxious not to improve.* In some parts of England, about the middle of last century, the inhabitants had a proverb —

He that havocks *may sit;*
He that improves *must flit!*

Or, in other words, he that exhausts the land may continue in the farm for an indefinite period; whereas he that improves must pay an advanced rent, or be obliged to quit; and, even at the present day, this detestable practice is followed in some of the finest English counties. Speaking of Berks, Messrs. Kennedy and Grainger tell us, that "owing to the system acted upon, the soil, generally speaking, is very much out of condition. A tenant, up to the last one or two years of his lease, drives it as hard as he possibly can, and, in fact, leaves it entirely *run out:* thus, the labour of several years is required to put it into any thing like good condition; whilst, by the time A has brought his land tolerably round, his neighbour B, perhaps, intends to relinquish his farm; and thus is kept up the neglected appearance of the country. When a farmer cultivates his own property, it is, in consequence of this system, generally seen to the greatest advantage, like a fat sheep among a lean flock." (Vol. i. p. 145.) And the practice is nearly similar in Bucks, Oxford, and several other counties. It is unnecessary to add, that all parties — landlords, farmers, and the public — are deeply interested in the suppression of such miserable practices.

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* In Italy, when the husbandman's time of holding is nearly expired, it is his custom to ruin the vineyard he rents, by forcing the trees to bear till they become barren. Such treatment is called by the neighbourhood, *lascia podera,* or adieu farm.—*Harte's Essays on Husbandry,* 2d edit. p. 160.)

c. *Payment of Rents.* — Rents are sometimes paid in money, and sometimes in produce. With respect to the former, it may be observed, that, when the lease is only for a few years, during which no great change in the value of money, or in the price of corn, can be expected, it is, perhaps, the best of any; but when the lease embraces a period of nineteen or twenty-one years, which is believed to be the most proper for ordinary tillage farms, the safer plan is to fix the rent at a certain quantity of produce, convertible into money at the current prices of the day. By this means the disturbing effects of changes in the value of money are averted, at the same time that the effect of those which occur in the cost of producing corn is mitigated. The plan is, however, defective, inasmuch as it obliges the tenant to pay more than the fair value of his farm in scarce years; while, on the other hand, it improperly reduces the landlord's rent in years of unusual plenty. A device has, however, been fallen upon, which has gone far to remove these defects. This consists in fixing a *maximum* and a *minimum* price; it being declared in the lease that the produce to be paid to the landlord shall be converted into money according to the current prices of the year; but that to whatever extent prices may rise above the maximum price fixed in the lease, the landlord shall have no claim for such excess of price. By means of this check, the tenant is prevented from paying any great excess of rent in scarce years: and to prevent, on the other hand, the rent from being improperly reduced in very plentiful years, a minimum price is agreed upon by the parties; and it is stipulated that, to whatever extent prices may sink below this limit, the landlord shall be entitled to receive this minimum price for the fixed quantity of produce payable to him. It is impossible, indeed, under any system, however complicated, so to regulate the rent of land that it shall always be the fair equivalent of the rent contemplated by the parties when the lease was contracted. But it seems that, all things considered, a fixed produce rent would, with the proposed checks to counteract the disturbing effects of unusual scarcity or abundance, afford the greatest attainable security both to landlord and tenant. Nor is this a mere speculative opinion: this very plan has been introduced into some of the best cultivated districts of the empire, particularly East Lothian and Berwickshire. And the experience of the estates in which it has been adopted shows that it is as effectual as can well be desired for the protection of the just rights of both parties, and for securing the progress of agriculture.

d. Reduction of Rents. — When it has been ascertained that a farm is let at too high a rent, that is, when the utmost exertions of industry and economy on the part of a skilful tenant cannot enable him to pay his rent, and to gain a fair return for his outlay and trouble, the landlord, if he consult his own interest, ought to make an adequate reduction. If he attempt to hold the farmer to the letter of his agreement, he will most likely occasion his ruin; but in the efforts of the latter to save himself and his family, the farm is sure to suffer. It will not be properly manured or tilled; scourging crops will be resorted to; so that though the landlord should succeed in squeezing the stipulated rent out of the occupier, during the currency of the lease, the bad state of the farm at its close, and the bad character the landlord will have justly acquired in the vicinity, will cause a far greater reduction of rent than would have taken place had it been made at the proper period.

e. Objections to the Contract of Lease. — It is of importance, however, to observe that the circumstances now mentioned, that is, the propriety, or rather the necessity, of granting a reduction of rent to a tenant who has engaged to pay more for a farm than it is really worth, forms the ground-work of the only plausible objection that has ever been made to the custom of granting leases. There is said to be no equality in the contract, — that while it binds one of the parties, it leaves the other free. If a farm be too low rented, the tenant will, it is alleged, continue to enjoy that advantage until the expiration of the lease; whereas, should it happen to be too high rented, it is next to certain that the landlord will be compelled to reduce the rent to what the farm is really worth. A transaction of this kind throws, it is contended, all the risk on the landlord, and gives all the advantage to the tenant; so that the only fair plan is, to let from year to year, or at most, for very brief periods. But, though specious, this reasoning will, on examination, be found to be without any good foundation. The complaint that a farm is too low rented is one that can hardly ever be made with any degree of justice at the commencement of a lease; and when made it is entitled to very little attention; for, as the proprietor might either let or not let, and as he has, in most instances, a choice of tenants, it is pretty clear he would not have let it, unless the stipulated rent had been, at the time, its fair value. It is true that the rent may become too low, or, rather, it may happen that the farm would let for more, after a few years of the lease have expired, than the rent actually paid for it. If the rent be a money rent, it will, of course, be affected by changes in the value of money; but if it be a certain quantity of produce, convertible into money, according to the prices at the time, the fair presumption is, if the farm become worth more during the currency of the lease, that it has done so in consequence of its being granted. The security which it gives to the tenant encourages him to lay out capital on the land, to follow the best system of cropping, and to execute various improvements that add permanently to the productive powers of the soil. Although, therefore, the sum paid for a farm let on a corn rent, and for a reasonable number of years, should appear to be low towards the middle or during the latter part of the lease, the landlord must not imagine that he has, by letting the farm, deprived himself of an advantage he would otherwise have enjoyed; for in point of fact, the apparent inadequacy of the rent arises from the improvements effected by the tenant; and these would not have been so much as thought of, but for the lease. Hence it is apparent, that in granting it, the landlord made no sacrifice, but the reverse. He obtained all the rent for his farm it was worth when it was let; while the improvements and meliorations effected under the lease will ensure a greater rent at its termination.

There are, therefore, no substantial reasons for impeaching the contract of lease, on the ground of its not placing both parties on a footing of equality. The inadequacy of a corn rent is, in ninety-nine out of every hundred cases, apparent only, or, in other words, is occasioned by improvements effected by the tenant. All that can be fairly said in support of the alleged want of reciprocity, is reducible to this, that if a landlord, through accident or simplicity, let a farm for less than it is worth at the period when the lease is entered into, he will not be able to get the rent raised during its currency; while, if a tenant should, from too anxious a desire to get a farm, or over-sanguine expectations as to its value, promise more for it than it is really worth, it will, generally speaking, be impracticable to hold him to his bargain. This is the whole amount of that want of equality of which so much has been said; and it appears to us to be very little indeed. The loss that a tenant sustains who takes a farm at too high a rent before he gets it reduced, supposing him to be ultimately successful in that respect, is always very severely felt by him; whereas, the fact, that a farm has been let below its value, warrants the conclusion that the additional rent that might have been obtained is of trifling importance to its proprietor. A landlord may be assured of the fact, that if the rent at which he lets a farm be such as a prudent and industrious tenant can pay, it will be paid either by the party in possession or by some one else. And no liberal landlord would wish, even if he had the power, to exact more from a tenant than the value of his lands; nor would a prudent landlord choose to add to his income, for a few years, by sums drawn from the capital of those engaged in the cultivation of his estate.

Nor is this all: not only does the granting of a lease of reasonable duration tend, by facilitating improvements on the part of the occupier, to raise the value of the farm, and, consequently, its rent, at the expiration of the lease, but it also puts a greater immediate rent into the hands of the landlord. There are very few arable farms that will let for so much, for a short lease, as for one of 19 or 21 years. So that, in granting such a lease, a landlord is really providing most effectually, not only for the future increase of his income, but is immediately adding to its amount.

f. Duration of Leases. — These, when granted in England, are seldom for longer periods than 7 or 14 years; the longest of which is decidedly too short to make it prudent for a tenant to undertake various improvements that do not promise a very immediate return. On the whole, the most intelligent farmers seem to be of opinion that 21 years is the most proper term for the endurance of a lease.

If it be longer, it tempts the tenant to delay commencing improvements; and if it be shorter, it prevents his reaping a full return for his outlay. A life lease is, perhaps, the worst of any. The period at which the occupancy is to terminate ought always to be fixed and ascertained, and not dependent upon any contingent or accidental circumstance. Hence, letting by lives is a very objectionable practice.

There are few things that seem more remarkable to a person acquainted with the agriculture of Scotland, on his visiting England for the first time, than the uniformity that prevails in the cultivation of extensive districts. The farms seem to be all managed on the same principle, and the farmers to be about equally skilful. In Scotland, on the contrary, there is the greatest diversity in the management of farms on the same estate, and even in the same parish; some being cultivated in a style far superior to, and in a manner wholly different from, others. This discrepancy has been variously accounted for. In our view of the matter, however, it is principally ascribable to the non-existence of leases in most parts of England, and to their existence in Scotland. The competition for farms in the former, and the uncertain tenure on which they are held, obliges the occupiers to farm each about as well as his neighbours; while it hinders any one from attempting new modes of management, or from making any expensive improvements. In Scotland, on the other hand, where leases for 19 or 21 years are universal, the tenants know that they will reap all the advantage of superior enterprise and industry, and are, therefore, led to put forth all their energies, and, if possible, to make new improvements; so that there is the greatest diversity in the modes of managing contiguous farms. If agriculture had attained to perfection, and it were desirable to keep it in the same uniform state, the English system would be most admirably suited for that object; but if, as is the case, agriculture be still very imperfect, and its improvement be a matter of vast national importance, then is the Scotch system of occupancy, by leases of reasonable endurance, infinitely superior to the English.

g. Letting by Fine. — Letting lands for a number of years, generally 7, by *fine*, was formerly customary in England; but is now rarely practised, except upon estates belonging to the church and to the universities. It is one of the very worst modes of letting that can be adopted. It deprives the tenant of his capital at the moment when he enters on the farm; and, consequently, incapacitates him, were he otherwise disposed, from attempting any improvements.

The practice of letting land by fine was latterly beginning to make considerable progress in Scotland, at least on the estates of entailed proprietors; and, had it been valid, it would, no doubt, from its giving heirs in possession the means of procuring an immediate advantage at the expense of their successors, have been pretty generally followed. Luckily, however, the House of Lords found, on the question being brought before them, that the practice was illegal, and by this means crushed a system inimical to agriculture, and obviated the principal objection to entails. It seems highly expedient that the legislature should interfere to put an end to the practice of letting church and college lands by fine.

k. Entry to Farms. — The ordinary term of entry to Farms in England is Lady-day; but Candlemas, Whitsuntide, and Michaelmas are also common terms in some parts of the kingdom. Michaelmas and Lady-day are the customary terms of payment; the first payment commences 6 months after entry to the possession of the farm. There is a very great difference in different places as to the conditions under which one tenant succeeds to another. The practice in Kent, and most of the southern counties, is, to oblige the incoming tenant to pay the outgoing tenant, by a valuation, for the crop on the farm, for work done in ploughing, fallowing, &c., and for manure and other items. Messrs. Kennedy and Grainger have shown, in their valuable work on the *Practice of Tenancy*, that this custom is highly objectionable, and that it has a powerful influence in keeping agriculture in a backward and depressed state. It obviously obliges the new tenant to pay for articles which, probably, he does not want, and for work which he has not superintended, and which, perhaps, is not well executed, or executed to his mind. In consequence, too, of this vicious practice, a large proportion of the tenant's capital is swallowed up at the moment of his entering the farm, and when, of course, it is of the most essential importance that he should have his entire funds under his control. The gentlemen now referred to affirm that, "in many counties in England, a farmer entering upon 200 acres of land, with a capital of 1,500*l.*, has to pay, according to the custom of the place, 1,200*l.* upon a valuation, and for stock, leaving him only 300*l.* to carry on his business; whilst in the north, and in Scotland, a farmer may enter upon the same quantity of land, having no valuation to pay, with only 800*l.*, and, after stocking his farm to the best advantage, have the same sum left that the other has, with much better opportunities of employing it profitably." — (*Introduc.* p. 16.) The same gentlemen observe, in reference to Kent, where a very large sum has usually to be paid by the incoming to the outgoing tenant, that "if his (the new tenant's) first year turns out bad, he is irretrievably ruined; which is and has been the case with hundreds, who, having entered upon a farm with all the money they could raise, have nothing left to carry it on, in the event of declining markets, or a wet season, affording them an unfavourable price for the produce of their first harvest." — (P. 250.)

The sooner this pernicious practice is changed, the better. In Scotland, the usual term of entry to a farm is Whitsuntide; the outgoing tenant having liberty to cut the crop, and to use the barns for its thrashing, but being obliged to leave the straw to his successor. The outgoing tenant is always compelled by the terms of his lease to leave a certain proportion of his lands in green crop or fallow; but for this the new tenant pays nothing; and as, speaking generally, the outgoing tenant enters into some other farm where the like practice prevails, no injustice is done to any one; while each commences operations with an unimpaired capital, which he disposes of according to the best of his judgment. This, and the plan of granting leases for periods of 19 years certain, with judicious stipulations as to management, form the peculiar excellence of the Scotch system. "It is these that render estates in Scotland so much more valuable than in

England, the rents in the former being nearly double what they are in the latter. It is true that in Scotland the tenants pay no taxes or rates; but, after deducting for this, rents would still be higher, (allowing for the measure) by *5s.* an acre than they are in England; and under the Scotch system a farmer would derive a greater advantage from paying an additional *5s.* per acre, than he would by entering upon a farm subject to a valuation, even at a deduction of *5s.* per acre; thus making a difference of no less than 10*s.* an acre." — (*Practice of Tenancy*, *Introduc.* p. 16.)

i. Burdens falling on the Tenant. — Farmers in England, besides the rent payable to the landlord, have, in most cases, to pay tithes, poor rates, &c. The latter are widely different in different periods, and in the same parish, at not very distant periods. Tithes are more steady and regular in their amount. Perhaps, together, they may amount, at a rough average, to from one third to two fifths of the rent. The measure now in progress for a commutation of tithe will go far to deprive it of the greater part of its pernicious influence; and poor rates have recently been considerably reduced.

k. Property in Leases. — In some countries, as in Scotland, leases are considered in the light of an inalienable estate, and descend, unless some *special provision* to the contrary be made in the lease, to the heir at law of the tenant, to the exclusion of assignees and subtenants. In other countries again, as in England, leases are regarded in the same light as moveable property, and, unless prevented by a positive stipulation, descend equally to the children of the occupier, or may be assigned, or sublet. The question, which of these modes of letting should be preferred, is not without difficulty; but on the whole, we are inclined to give a decided preference to the former. Under it, both the landlord and farmer see clearly what they are about: the former knows who is to occupy his lands, and that they can neither be subdivided nor sublet without his authority; and the latter, being aware that he, or his heir at law, will have to occupy the farm during the entire currency of the lease, sets immediately about making the necessary improvements; and, instead of attempting to assign, sublet, or subdivide, founds all his hopes of success on the superiority and greater economy of his management. It must, indeed, be admitted, that in England the circumstance of leases being moveable property has not hitherto been productive of any very material inconvenience; but this is to be ascribed to the adventitious and powerful checks that have counteracted their naturally pernicious operation. Among the most prominent of these seem to be the great extent of land in England occupied by tenants at will, or by tenants whose tenure does not depend on any precise agreement with their landlords, but on the *custom* of the estate or district. The owners of such lands do not, speaking generally, permit them to be divided amongst the children of the occupiers, in the event of the death of the latter; and when estates are let on lease, it is usual to insert conditions prohibiting subdivision. In addition to these checks, there can be no doubt that the poor laws have contributed to inspire the landowners with a salutary dread of the too rapid increase of the agricultural population, and have stimulated them to take very strong measures to prevent the splitting of farms, and the building of cottages.

But in Ireland, where the law as to leases is the same as in England, and where the checks that have prevented its operation in this country have either not existed at all, or have been comparatively inefficient, it has been, as will be elsewhere shown, productive of the greatest mischief.

The effects of the opposite system in Scotland have been equally striking and beneficial. A Scotch tenant can neither sublet nor subdivide his farm, and at his death it must descend entire to his heir at law. The younger children are not, as in Ireland, taught from infancy to look to the land for support; on the contrary, they are early made aware that farming is not a business on which they can enter, and that it is indispensable that they should apply to something else. In consequence, they either establish themselves in towns, or emigrate to other countries; and, perhaps, there is no one circumstance that has contributed so much as this to inspire Scotchmen with that adventurous, enterprising spirit for which they are celebrated, and few that have done more to increase the size of farms, and to accelerate the progress of agriculture.

3. *Farm Buildings.* — These, in England, are of every variety of magnitude, shape, and materials. Generally, however, they have, when contrasted with those in the south of Scotland, a more antique, rural, and comfortable appearance. The farm-house is always either entirely detached, or is separated by a party wall from the offices. It is sometimes one and sometimes two stories high; being fitted up according to the taste and condition of the occupiers, but generally with a good deal of attention to comfort. The material of the walls and roofs of the buildings depends as much on the facility with which it may be obtained, as on any thing else. Sometimes, and most frequently, perhaps, the walls are of brick, sometimes of wood, sometimes of stone and flint, and in the older class of houses they frequently consist of lath and plaster. Tiles, thatch, and wood, but particularly the first two, are the materials most generally used in roofing farm-houses and offices in England; but whenever slates can be had at a reasonable expense, they should be preferred, as they make a better, and in the end, a cheaper, covering.

The older class of farm buildings are, in very many instances, inconveniently situated, and ill-suited for the purposes to which they are now applied. During the present century, however, improved houses and offices have been erected in most districts. But these have been not unfrequently constructed on a far too expensive scale; and numerous instances might be pointed out where the present rent obtained for farms is little more than sufficient to pay the interest of the money expended on buildings!

In England, farm buildings are mostly constructed at the expense of the landlord. It is customary to put them into repair at the entry of a new tenant to the farm, who is bound to leave them in what is called a tenantable state. Sometimes, when buildings have to be erected, the outlay is defrayed, in the first instance, by the tenant, who is allowed a corresponding deduction from his rent. But this is an objectionable practice, inasmuch as it diverts the capital of the tenant from the cultivation of his farm, and cripples his means at the very moment they are most wanted.

Cottages in England differ as much in form and materials, as the farm buildings. They appear to be quite as much celebrated for their comfort, neatness, and cleanliness as they deserve; for, there are large numbers of cottages, in many parts of the country, of which these are any thing but prominent characteristics. Arthur Young says of the Suffolk cottages, that " they are in general bad habitations, deficient in all contrivance for warmth and for convenience; the state of reparation bad, and the deficiency of gardens too general."—(*Survey of Suffolk*, p. 11.) And this statement may, with little alteration, be applied to the common sort of cottages in most other countries. Much, however, depends on the prevalence of peculiar habits and practices, and on the conduct of landlords. Some of the latter laudably exert themselves to improve and beautify the cottages on their estates; and there are not many ways in which a landlord can do more good at so little cost to himself.

Gardens are attached to many English cottages. As these may be wrought at extra hours, they are a great advantage to the occupiers, by furnishing them with a supply of potatoes and pot-herbs. Some benevolent individuals have proposed increasing the quantity of land attached to cottages, and giving a cow to each. But the proposal has met with little favour, and we do not think it deserved much. Were cottagers generally placed in the situation alluded to, they would speedily lose their industrious habits, and would, at no remote period, become half employed, petty occupiers, depending for subsistence wholly on the little patch of land in their possession. We certainly have had quite enough of experience of the wretched effects of a system of this sort in Ireland to hinder us from seeking to introduce it into England.

Enclosures and Fences.—There are few things that contribute more to the improvement of agriculture than the division of lands into fields of a suitable size, properly fenced. It is pretty generally believed, by most well-informed persons, that this has not been so much attended to in England as it ought. The fences mostly consist of hedges; but these, though they look extremely well, and give a rich, luxuriant appearance to the country, frequently occupy a great deal of ground, at the same time that they harbour vermin. Perhaps a well-built stone wall is, for agricultural purposes, the best of all fences. But the scarcity of stones is, in many parts of England, of itself sufficient to prevent the construction of such fences; and being more costly at the outset than a hedge, and less beautiful, they are only met with in a few districts. The fields in several counties seem to be inconveniently small. Even in grazing lands the inclosures should be pretty extensive; for animals are known to thrive best when they have rather a wide range of pasture. In tillage, the breadth and frequent recurrence of the fences in petty inclosures occasion the loss of a great deal of land, and the waste of much labour in ploughing, harrowing, &c. In consequence, however, of the smallness of the fields, they are better sheltered; and it is contended by some that this countervails the other disadvantages attaching to them. In some places, wooden palings are extensively employed in fencing. Hedges are sometimes planted and trained at the expense of the landlord, under the superintendence of workmen employed by him; sometimes, on the other hand, the expense of their planting and training is devolved wholly on the tenant; and sometimes it falls partly on the one and partly on the other. But it is uniformly almost for the interest of the landlord to plant and superintend hedges. If neglected at first, they rarely become good fences; and, as it requires much labour and time to train them, and bring them to maturity, the interest most tenants have in their farms is not sufficient to make them give that care and attention to hedges that are essential to their growth, excellence, and preservation.

4. *Implements.* — As respects the

——— "Duris agrestibus arma,
Queis sine, nec potuêre seri, nec surgere messes,"

our remarks must be very brief; for it would lead us far beyond our limits were we to attempt to particularise, much more to describe, the various agricultural implements used in England. We cannot, however, forbear remarking that their construction is of the greatest importance, inasmuch as improved implements not only enable every agricultural operation to be performed better, but also more expeditiously, and at a less cost; so that they increase, at one and the same time, the disposable produce of the soil, the profits of the farmer, and the rent of the landlord.

Ploughs. — Considering the vast importance of the plough as an agricultural instrument, and the many ages that have elapsed since

——— "Ceres ferro mortales vertere terram
Instituit,"

one should have thought that its structure would have been long since thoroughly investigated, and that all would have been agreed as to the best form of ploughs to be used for different purposes, and in different soils. But, in point of fact, few instruments have attracted so little attention. Perhaps it was supposed that an operation, apparently so rude as that of turning over the ground, might be performed with any sort of implement; and that it would be useless to bestow art or nicety on one that was to be guided by the clumsy hands of illiterate peasants. But, in whatever way it may be accounted for, it is certain that few or no efforts were made till the latter part of last century to investigate the construction of ploughs on scientific principles.* Fortunately, however, this has been at length satisfactorily accomplished; the best form of the instrument has been ascertained; it is now, also, manufactured with the greatest precision, and at a very cheap rate, by common artisans in many parts of the country; and, while the work executed by the best of the improved ploughs is infinitely superior to that of the barbarous and cumberous implements formerly in use, it is executed at less than half the expense![*] But, in despite of all this, such is the tenacity to established practices, that the unimproved ploughs still maintain their ground in not a few districts; and there is the greatest difference, in different parts of the empire, even where the soils are similar, in the description of improved ploughs in general use.

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* The best essays on the construction of the plough are by Mr. Arbuthnot, in *Young's Eastern Tour*, ii. pp. 523—560.; and by Mr. Bailey, in his *Survey of Durham*, pp. 390—404.

The ploughs at present in common use in England may be divided into the three great classes of swing-ploughs, wheel-ploughs, and turn-wrest ploughs. The first, or swing-plough, is supposed to be the oldest variety in England: formerly it was exceedingly heavy, clumsy, and ill made; but an unimproved swing-plough is now rarely met with. That which is at present most commonly used in the northern, north-western, and some of the midland counties, is known by the name of the *Scotch plough*, and is by far the best implement of the sort. It was much improved by Mr. James Small, to whom the agricultural interest is, on this account, under the greatest obligations. It has a feathered sock, or share, a curved mould-board, and is now usually made wholly of iron. In Scotland, it is uniformly drawn by two horses abreast, driven by the ploughman. Owing to the diminution of friction, the draft is less in it than in wheel-ploughs; but it requires considerable skill and attention on the part of the ploughman. A statute acre is, under ordinary circumstances, about the average quantity ploughed in a day by a man and two horses with this plough. Ploughs with one or two wheels are common in the southern and south-western, as well as in some of the midland, counties: a peculiar plough of this construction is almost exclusively seen in Norfolk. The chief recommendations of wheel-ploughs are, that they require little skill on the part of the ploughman, and that the depth and width of the furrow may be correctly adjusted; but, on the other hand, the friction caused by the wheels adds to the heaviness of the draught; while they are more expensive, and liable to be choked with earth, and put out of order, than the Scotch plough. Turn-wrest ploughs are general over Kent, and on the chalk-hills of Sussex and Hertfordshire; but they are not common in other parts of the kingdom. They admit of having the mould-board removed from one side to another at the end of each furrow, so that the earth may be always thrown on one side. Besides these three principal varieties, and innumerable subvarieties of each, double-moulded ploughs, &c. are used; but their use is by no means general, nor is it very likely to increase. The old Welsh plough, which is still in pretty common use in Wales, is a most defective implement. "It is not calculated to cut a furrow, but to tear it open by main force. The share is like a large wedge; the coulter comes before the point of the share sometimes, and sometimes stands above it; the earth-board is a thing never thought of, but a stick (a hedge-stake, or any thing) is fastened from the right side of the heel of the share, and extends to the hind part of the plough: this is intended to turn the furrow, which it sometimes performs, and sometimes not; so that a field ploughed with this machine looks as if a drove of swine had been moiling it." — (*Davies's Agriculture of South Wales*, vol. i.

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[*] *Brown on Rural Affairs*, i. p. 224.

p. 187.) Several proprietors and farmers have introduced improved ploughs; but they are not in nearly such general use as might have been supposed.

Waste of Labour in Ploughing. — Perhaps the imperfect construction of the ploughs, their great weight, and the extensive employment of those with wheels, may be one cause why, in England, a much greater number of horses than are necessary are employed in them. If we except the counties of Norfolk, Suffolk, and Essex, in the south of England, and those of Northumberland, Cumberland, Durham, and Westmoreland, in the north, there is, perhaps, none in which more than 2 horses will not sometimes be seen in a plough. In some counties, teams of 3, 4, and very frequently 5, horses are employed in the tillage of the lightest soils; and on heavy soils a greater number are sometimes made use of.* Notwithstanding this excess of horses, the furrow is seldom above 4 inches deep on light, and 6 inches on heavy, soils; nor is there, generally, more than three fourths of an acre ploughed in a day. Of course, where there are more than 3 horses, a driver, as well as a ploughman, is necessary. The horses are invariably, almost, yoked in line; so that when the fields are small, and the turnings, consequently, numerous, most part of the work is done by 2, or rather by 1 horse.

This waste of the labour of men and horses in ploughing is, perhaps, the greatest defect in the agriculture of England; and it is one that does not seem to be disappearing, at least in any considerable degree. It is not meant to be affirmed that all lands may be ploughed with two horses; but such is the case with by far the largest proportion. We do not, in fact, think it would be going too far to affirm that a third part of the horses at present employed in farming, in most of the southern, western, and midland counties, might be advantageously dispensed with, were the practice as to ploughing adopted in them that is universally followed in the north. Hence the great importance, in a national point of view, of the discontinuance of the present vicious system. " Wherever teams of 2 horses are used, the work is decidedly better done than where they are more numerous."—(*Young's Southern Tour*, 2d edit. p. 288.) On the one hand, therefore, the supply of food for man would be most materially increased by the saving in the keep of horses, and to some extent also by the improved tillage, that would result from the abandonment of the present practice; while, on the other hand, the rents payable to the landlords would be augmented in consequence of the reduction of the farmer's expenses. It is not easy, indeed, to see how the landlords could do any thing that would tend so much to advance their own interests and those of the public as their insisting, in the letting of farms, on stipulations calculated to put an end to this waste of labour. This would be the easiest, as well as the most effectual, mode of getting rid of the abuse.

There is nothing in the harrows, or other instruments used in the cultivation of the soil in England, that seems to call for any particular notice in a work of this sort. Almost constant changes are making in them; but simplicity of principle and construction are generally believed to be too little attended to. Some of the drill machines, or machines for sowing grain and other small seeds in rows, have been contrived so as to execute their work with the greatest regularity and precision. In all the southern counties, four-wheeled waggons, drawn by 2, 3, or more horses, are in common use; while in the northern counties single-horse carts, similar to those now universally used in Scotland, are generally met with. A great deal of discussion has taken place respecting the comparative advantages and disadvantages of waggons and carts; but it is only under peculiar circumstances that they can be fairly compared. Where roads are good, and the ground firm and dry, there would seem to be little doubt that the preference should be given to carts; but where roads are bad, and the ground clayey, soft, and tenacious, waggons may, perhaps, be the most suitable. There is a great variety in the form and construction of waggons, most counties having one or two varieties peculiar to itself.

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* In the Vale of Gloucester it is customary to use *seven* horses!

The *thrashing machine* is now pretty common. In the southern counties, indeed, into which its introduction has been comparatively recent, it has lately become the object of popular attack; and to such an extent has the prejudice against it been carried, that in many districts the farmers have been obliged to demolish such as were erected! Conduct like this is as destructive of the interest of the peasantry, as it is disgraceful to their intelligence. The employment of thrashing machines relieves the labourers from the severest drudgery incident to agriculture; they enable the work to be done at the time there is a demand for corn; and, by doing it better, or separating the corn (particularly wheat) more completely from the straw, they add both to the wealth of the farmer and the produce of the country; enabling the former to employ, and the latter to feed, more labourers. This latter is, indeed, a most important consideration. It is calculated by the best informed agriculturists, that 5 per cent., or one twentieth part, more produce is afforded by a crop thrashed by machinery than by the old method; and, estimating the total produce of the corn crops of Great Britain and Ireland at 50,000,000 quarters, we should, on this hypothesis, have an additional annual supply of no less than 2,500,000 quarters, were thrashing machines universally substituted for flails! So great an increase of produce in the hands of the farmers would obviously enable them to employ far more labourers than would be superseded by the use of the machine.—(*Brown on Rural Affairs*, vol. i. p. 332.)

Mr. Stevenson seems inclined to think that the ploughs, and most of the other agricultural implements in common use in England, are not generally constructed on scientific principles, or with that degree of skill as to enable them to do their work in the best manner, and with the least cost of time and labour. This, however, does not proceed from the want of the best models in every department, but, as already stated, from the tenacity with which old practices are persevered in. So much is this the case, that, even in the vicinity of the metropolis, where the best workmen and best implements of all sorts are to be found, the ploughs are peculiarly unwieldy and ill contrived;

and such is their general character in many other counties. It is plain, therefore, that the general introduction of the improved Scotch plough, at least on all light lands, would be a most material improvement.

But, notwithstanding these defects, the implements used at present by the mass of the English farmers are, speaking generally, very decidedly superior to those in ordinary use in most other countries; and, though a good deal remains to be accomplished, the improvements that have been already made in their construction have powerfully contributed to the superiority of our agriculture.

Horse and Ox Labour.—Innumerable dissertations have been written on the question as to the comparative advantageousness of employing horses or oxen in agricultural operations. It is plain, however, that this question may be differently decided under different circumstances; and that in one case horses, while in another case oxen, may be most profitable. But, on the whole, the superiority of horses seems, in this country at least, to be great and obvious; and, notwithstanding the efforts of various amateur farmers to the contrary, the employment of oxen in field operations appears to be every day diminishing, and is now principally restricted to Devonshire, Herefordshire, Sussex, and Glamorgan. But, even in these counties, a great deal of work is done by horses. The inferiority of oxen to horses, for general purposes, is admitted by every one; and, even in tillage, ox teams are not to be compared, in point of economy, with the two-horse plough.

SECT. III.—*Tillage Husbandry.*

Fallows.—Before an improved system of tillage was introduced into England, there appears to have been little or no fallow land. At length, however, it was perceived that the loss of a crop every year that a fallow occurred was more than balanced by the improvement it occasioned in the crops of the other years. When the practice had been introduced, it rapidly extended, and appears to have been carried, about the middle of last century, to an excess. This occasioned a reaction; and several writers of eminent talent exerted themselves to show that fallowing might be nearly, if not entirely, laid aside. A great deal of controversy has taken place as to this important point.

But, as experience has proved that most descriptions of land may be effectually cleaned and prepared for wheat by the substitution of crops of drilled turnips, beans, potatoes, &c. in the place of naked fallows, the latter have been fast losing ground in most districts, but especially in the light or turnip soils. In strong clay lands, however, the practice of fallowing seems to be pretty stationary. In the southern counties, indeed, which are favoured with a comparatively long and dry summer, attempts have been made to dispense with fallows by substituting beans in their stead; and it is believed that, even on heavy clays, when properly attended to, they have in most respects answered the object in view.

Mr. Bailey has the following observations on the subject of fallowing:—

"It has been disputed, whether fallowing was necessary to the fertility of land or not. The difference of opinion, I am inclined to think, is, in a great measure, owing to the idea annexed to the term, or to some small remains of prejudice for ancient customs; as, before the introduction of turnips, it was thought absolutely necessary to summer-fallow the dry soils as well as the wet, under the idea of renewing their fertility by a naked summer-fallow, or year of rest; but experience has proved that the dry soils can bear a crop of turnips of considerable value, and after that a crop of wheat equal, if not superior, to what it would have been from a naked summer-fallow, and the land left in an equal state of fertility. It therefore appears that, in this case, the land has received no injury by not being left naked or uncovered by the turnips. The restorative fertility must, therefore, be owing to another cause, which is common to both modes, and may probably be sufficient ploughings, clearing of pernicious weeds, and proper manures.

"Upon strong loams it has been found, that if beans are drilled at 30 inches intervals, and properly hand-hoed amongst the stems, and horse-hoed or ploughed between the rows, that the land may be left as clear of weeds, and the crop of wheat succeeding the beans be equally good, as one obtained after naked fallow.

"From these instances it appears, that it is not necessary to the fertility of land to let it lie in a naked or uncultivated state through the summer; but that it is necessary to keep it clear of weeds, and in a duly pulverised state, supposing the manures in both cases to be equally the same.

"But there are many parts of this country where the soils are moist, thin loams, upon ochrey clay, that are so addicted to the produ[illegible]tion of agrostis nigra, alba, and stolonifera, that it is scarcely possible to effect their destruction without a naked summer-fallow, at least in their present state; but it is probable that superior cultivation may remove the necessity of having recourse to this measure so often as has been the prevailing practice." —(*Survey of Durham*, p. 106.)

Alternation of Crops.—The courses of crops commonly cultivated vary much, not only with the variations of soil and climate, but even where these are similar. In the best farmed counties, such as Norfolk, Suffolk, Essex, Lincoln, Kent, and Northumberland, two white crops are rarely sown in succession. A green or a pulse crop, or a plain fallow, is interposed between every two white crops. These green crops not only preserve the fertility of the soil, but, when sown in rows, as most of them usually are, they afford, as has been just mentioned, an opportunity of extirpating weeds by the use of the horse and hand-hoe; and even when sown broad-cast, by their taking complete possession of the ground, if it be properly prepared, the growth of weeds is effectually checked. In other respects, these intermediate crops are of the utmost importance in every good course of management. Whether they be eaten on the ground, or carried to the farm-houses and straw-yards, much valuable manure—the plentiful supply of which is essential to all good husbandry—is obtained from their consumption; and on sandy or gravelly soils, when a part only of a turnip crop is eaten by the sheep on the ground, the greatest defect of such land is removed by their treading; and, in many cases, it is rendered as capable of producing a valuable crop of wheat as soils of a closer texture. This alternate course of husbandry forms the grand distinction between the old and the new or improved systems. Wherever it is not introduced, husbandry must necessarily be in the most backward state; and such, we regret to say, is its present condition in very many districts. Oats or barley after wheat, wheat after oats, and two, or even three, crops of oats in succession, are by no means uncommon. On light soils, the rotation commonly pursued by the best agriculturists is borrowed from the county of Norfolk, and is thence called the Norfolk, or four-shift, system: it consists of, 1st, turnips or potatoes; 2d, barley, or wheat; 3d, clover; and, 4th, oats, or where barley followed turnips, clover is sown along with it, and succeeded by wheat. No one rotation is nearly so common on heavy soils as this is on light soils and inferior clays. Those most pursued on the former are, 1st, fallow; 2d, wheat; 3d, beans; 4th, oats; and then, 5th, fallow: or, 1st, fallow; 2d, wheat; 3d, clover, for one or two years; 4th, oats; 5th, beans; 6th, wheat; 7th, fallow. Barley is sometimes, but not often, introduced into the rotations on strong lands; and tares, rape, or cabbages are occasionally, though seldom, substituted for fallow. In the Isle of Sheppey, in Kent, and in a few other spots of uncommon fertility, wheat and beans are grown alternately, without the intervention either of a fallow or of any other crop.

Besides these rotations, which are applicable only to grounds kept constantly under the plough, there are others which form what is called the *convertible husbandry*. In this system, the ground, after being laid down to grass for 2, 3, 5, or more years, is broken up and sown with different species of corn, intermixed with green crops, or fallows, for some years, after which it is again laid down to grass. This system is making its way into the best farmed districts of England; so that more grass-land (not permanent, but for a few years) is now seen in the strictly arable districts than was formerly met with; while a greater breadth of ground is under the plough in many of those counties which formerly were almost exclusively in grass.

Crops cultivated. — *Wheat* (*Triticum*) is by far the most important, and most extensively cultivated species of bread-corn raised in England. It appears, from the previous statements, that it is sown after fallow, turnips, cabbages, potatoes, beans, &c. In light soils it follows clover and the cultivated grasses; but it never, at least in the best farmed districts, follows any other white crop. Wheat may be raised on all sorts of soils; but those of a clayey nature are the most suitable. So peculiarly, indeed, is wheat adapted to heavy, stiff lands, that they are usually termed "wheat soils." The lighter the soil, the less is it suited to this species of grain; and it is an error in practice to force the cultivation of wheat on soils, and under circumstances, better suited to the production of other grain. In this country, it does not admit of being raised at a great elevation. As it is a crop on which the farmer mainly depends, the preparation for it, in whatever rotation it comes, should be an object of great care and attention. If it be intended to sow wheat after fallow, the land is repeatedly ploughed, harrowed, and well manured; if after clover, only one ploughing is given, and seldom more after beans: where tares have been previously sown, they are got off the land in sufficient time to plough it more than once: when wheat follows turnips or cabbages, it must, unless they be stored or eaten, be sown in the spring months.

The kinds of wheat grown in England seem mostly all to be varieties of two species — the *Triticum hybernum*, or winter wheat, and the *Triticum turgidum*, or turgid wheat. The culture of the latter is mostly confined to clays; the cone, or bearded wheat, being the most esteemed of its varieties: it enjoys this pre-eminence, not because it yields the finest flour, but because it is comparatively productive, and not subject to disease on wet soils.

The varieties of wheat are perpetually changing, in consequence of variations of culture, climate, and soil. Those most in use are distinguished by different local terms. They may, however, be divided into the two great classes of *red* and *white*,—the latter being superior as respects quality of produce, and the former of hardiness. In general, the thin and smooth-chaffed varieties are preferred to those that are woolly and thick-chaffed. Wheat sown in the spring is called *spring wheat;* but the species is quite the same as that sown before winter; though, by being sown in the spring, its period of ripening is changed. It is always sown before winter when the ground can be got ready; but when it follows turnips, cabbages, and such like crops, it has frequently to be deferred to the spring.—(*Low on Agriculture*, pp. 222—228.)

Winter wheat is seldom sown in any part of England before the beginning or middle of September, or later than the end of November. Spring wheat is generally sown between the middle of March and the middle of April. The seed is invariably pickled or steeped; a process intended to prevent *smut.* The quantity of seed allowed to an acre, when sown broad-cast, usually varies from 2½ to 3, and even 4, Winchester bushels.

The drill husbandry, as applied to wheat, is practised to a considerable extent in many parts of England; and in some places it is not unfrequently planted with the dibble; but by far the greater portion is sown broad-cast. While growing, but little attention or labour is bestowed upon it. When drilled, it is generally hoed; and when sown broad-cast, it is sometimes hand-weeded, and occasionally, though rarely, harrowed and rolled in the spring. But these operations are generally, perhaps, prosecuted as much in the view of covering the clover and grass seeds, that are then frequently sown in the wheat fields, as of improving the wheat crop.

Wheat harvest generally commences, in the south of England, about the 25th of July or the beginning of August: in the midland counties it is about 10 days, and in the northern counties from a fortnight to three weeks, later. There is a striking difference in the harvest-field operations, with respect to this as well as other kinds of grain, between the north and south of England: in the former, during harvest, the corn-field exhibits a large number of reapers, perhaps 50, 60, or even 100, all working together, and presenting an interesting and animating spectacle. In the south of England, on the other hand, and over the greater part of the midland counties, wheat is reaped by small sets of individuals, who contract to cut a field or a certain number of acres; so that, in general, the field merely exhibits one or two men, with, perhaps, their wives, working in different parts of it. Wheat is seldom or never cut down with the scythe, but is either reaped with the common sickle, or, as is the practice in some of the counties near the metropolis, as well as in some of the south-western counties, it is *bagged*, that is, struck down near the ground with a large and heavy hook. It is universally bound in sheaves, which are set up in *shocks* or *stooks*, each containing 12 or 14 sheaves. Perhaps no circumstance marks the difference of climate in the south and north of England more strongly, than the difference in point of time during which it is necessary to keep wheat and other grain in the field before it is carried home. In the southern counties, it is generally ready in a week or ten days; whereas in the north it is necessary to let it stand out for two or three weeks. In the southern, eastern, and midland counties, it is frequently put into barns: in the north, it is almost universally stacked.

As this grain is so extensively cultivated, frequently on very inferior soils, and after very imperfect preparation, the produce per acre varies materially in different counties and districts; it is also very liable to injury from a bad seed time, a wet winter, or a blight during the period of its flowering (which last is the most common cause of the failure or deficiency of our wheat crops); so that its produce varies as much in different seasons on the same farms, and under the same management, as it does during the same season in different farms. The lowest quantity of produce, except where an absolute deficiency from blight occurs, may, perhaps, be rated at from 10 to 12 bushels an acre; and the highest at from 48 to 56 or 64 bushels. Occasionally, indeed, even more than this has been reaped on the deep loams near Chichester, in Sussex, on the calcareous loams near Epsom, and in some of the more favoured and highly cultivated parts of Kent, Essex, Lincoln, Somerset, &c. A tabular view of the average produce of the different counties of England and Wales, in wheat, barley, oats, &c., will afterwards be given.

The wheat counties are Kent, Essex, Suffolk, Rutland, Hertford, Berks, Hants, and Hereford; that is, these are the counties most distinguished for the quality as well as the quantity of their wheat. In the north, this grain is sometimes raised of a very fine quality; but generally it is inferior; being colder to the feel, darker coloured, thicker skinned, and yielding less flour. In the best wheat counties, and in good years, the weight of a Winchester bushel of wheat varies from 60 to 62 lbs. In the Isle of Sheppey, in Kent (where, perhaps, the best samples are produced), it sometimes weighs, in favourable seasons, 64 lbs. a bushel. Where the climate is naturally colder, wetter, and more backward, or in bad seasons, the weight of the bushel does not exceed 56 or 57 lbs. It is calculated that, at an average, a bushel of good English wheat weighs 58½ lbs.; and that the average yield of flour is 12½ lbs. of flour to 14 lbs. of grain. The weight of the straw is supposed to be about double that of the grain; so that an acre yielding 30 bushels of wheat, at 58½ lbs. per Winchester bushel, would yield 3,510 lbs. of straw.

Rye (*Secale cereale*), the bread-corn of Germany and Russia, was at one time very extensively cultivated in this country; so much so, that Mr. Charles Smith calculated there were in England and Wales, in 1765, 880,000 individuals, or about *one seventh* part of the then population, who were consumers of rye (*Tracts on the Corn Trade*, 2d. ed. p. 182.); but it is now very little cultivated in a separate state, and has ceased to be consumed by man, unless when mixed with wheat. This is ascribable to two causes: in the first place, the farmers have discovered that the light lands, which were formerly deemed fit only for rye, may, by proper management and attention, be made to produce excellent crops of barley or wheat; and, in the second place, the increased wages and improved circumstances of the labouring classes have made them prefer wheaten bread to rye bread, or, indeed, to bread made of any other sort of grain. Rye is still, however, raised in Northumberland and Durham. In the latter it is very rarely grown alone; but a mixture of rye and wheat, provincially termed *maslin*, is very extensively grown, and a greater breadth of fallow land is covered with it than with wheat. It is mixed in all proportions from ⅛th of wheat to ⅞ths of rye; and from ⅛th of rye to ⅞ths of wheat, according as the grower thinks the ratio will best suit his soil. Mr. Bailey says it has been long remarked, that individual grains of each species are plumper and better perfected than where grown separately; and that a bushel of good maslin weighs more than a bushel of either good wheat or good rye. Bread of excellent quality, made of this mixture, is in general use throughout Durham, and in many parts of Wales. — (*Survey of Durham*, p. 124.) Rye is frequently grown as green food for cattle. It comes early in the spring to maturity, allowing time for a subsequent crop the same year.

Barley (*Hordeum*). — The culture of this grain has been supposed, but, probably on no very good grounds, to be on the decline in England. In 1765, Mr. Charles Smith estimated the number of barley consumers in England and Wales at 739,000; and, as a large proportion of the population of Wales, Westmoreland, and Cumberland still subsist chiefly on barley bread, we are inclined to think that this estimate may not, at present, be very wide of the mark. But the great demand for barley in England is by the manufacturers of beer, porter, and British spirits; and, though the consumption of these articles has not increased proportionally to the increase of population and wealth, there is no reason to conclude that it has diminished. Barley is also extensively used in fattening black cattle, hogs, and poultry. It is a most important crop in the rotation best adapted to light lands. The principal barley counties are Norfolk, Suffolk, Cambridge, Bedford, Leicester, Nottingham, and the upper parts of Hereford, Warwick, and Shropshire. Where its culture is best understood, and most extensively followed, as in Norfolk, it is generally preceded by turnips, or other green crops; after these are drawn or eaten off, the land is twice or thrice ploughed, the seed furrow being given when it is dry, and immediately before the barley is sown. The season for sowing extends from the middle of March to the end of April. It is, perhaps, more generally drilled than wheat; but this mode of culture is by no means common: when it is drilled, about 2 bushels of seed are sown per acre; in the broad-cast method, 3 or 3½ bushels. There are two leading species of this grain in cultivation, the *hordeum distichon*, two-rowed, or common barley, of which there are several varieties; and the *hordeum hexastichon*, or six-rowed barley. One of the best known varieties of the latter is called in this country bere, or bigg. Its culture is, however, almost entirely confined to the northern counties and Scotland. Barley harvest, in the south of England, commences nearly about the same time as the wheat harvest, or perhaps, a little later; in the north it is often cut down before wheat.

The practice of mowing it, which has long been followed in the south, is becoming general; but the carrying it in a loose state, without being bound in sheaves, is confined to the southern counties; and is, even there, attended with a good deal of risk. It is seldom housed in any part of England. The produce varies from 20 to 64 bushels an acre — the most usual crop is from 28 to 40 bushels: the usual weight of a Winchester bushel of barley is 50 or 51 lbs.; but the best Norfolk barley sometimes weighs 53 or 54 lbs. When barley is raised on strong land (which had better, however, be sown with wheat), a summer-fallow preparation is sometimes given. The practice of sowing barley after wheat or oats is, luckily, on the decline.

Oats (*Avenæ*). — In 1765, Mr. Charles Smith estimated the number of consumers of oats in England and Wales at 623,000; but there can be no doubt that they are now considerably fewer. The feeding of horses has at all times occasioned the greatest consumption of oats in this part of the kingdom; and as the number of horses kept for business and pleasure has been vastly increased within the last 30 or 40 years, the culture of oats has been much extended. As, however, they do not suit so well with a warm and early, as with a more moist and backward, climate, the crops in the former being neither so abundant nor of such good quality as in the latter, the cultivation of oats is more attended to in the north and in Wales than in the southern counties. They are raised most extensively in Northumberland, Durham, Cumberland, Westmoreland, Lancashire, and in the fens of Lincoln, Huntingdon, Northampton, Cambridge, and Norfolk. It has been supposed that about a third part of the oats grown in England are the produce of the fens; they are also grown on the high lands of Cheshire, Derbyshire, and Staffordshire, and in most of the Welsh counties, particularly in Caermarthen. In the midland counties their cultivation is less extensive; though they are grown in Leicester, and on the Trent bank land of Nottingham. There are very fine crops of oats in the Isle of Thanet, and in other parts of Kent.

There are three leading varieties of the common oat (*Avena sativa*) cultivated in England, — black; gray, dun brown, or red; and white. The first two varieties, being comparatively hardy, may be raised on very inferior soils, and in situations unsuitable for the other. The black oat is now, however, hardly known in England; and the dun, or red oat, is principally confined to the moors of Cheshire, Derbyshire, and Staffordshire. White oats are, speaking generally, less hardy than either of the other varieties, and require a better soil; but they are, at the same time, earlier, heavier, and yield a greater quantity of meal. There are numberless, and some widely different, sub-varieties of this kind. That which is called the potato-oat has long enjoyed the highest reputation in this country, and is almost the only one that is at present raised on land in a good state of cultivation in most parts of England and the south of Scotland, and usually brings a higher price in the London market than any other variety. It was discovered growing in a field of potatoes in Cumberland in 1788; and from the produce of this single stalk, which there sprang up by accident, most probably from the manure, the entire stock now in general use has been obtained! Besides the above, a species of naked oat (*Avena nuda*), provincially called *pillar* (*antè*, p. 222.), is grown in Cornwall.

Oats are almost always, in every part of the kingdom, the first crop on old grass land, to which they are more suitable than any other species of grain. They are also sown generally on strong land, after clover ley; and in the north of England they succeed clover on most kinds of soil. Besides coming in this rotation, they are sometimes sown after turnips; and where the husbandry is indifferent, they are taken as the last crop before fallow, even when the ground is dirty and exhausted. In the southern counties the end of February, and in the midland and northern counties the middle or end of March, is the usual seed time. They are very seldom drilled. Five bushels is the ordinary quantity of seed to the acre. Perhaps the produce of no species of grain varies more than that of oats. Where the ground is foul and exhausted, not more than 20 bushels an acre are obtained; but on rich soil, well managed, and in favourable years, 60, 70, and sometimes even 80 bushels and upwards, have been reaped. Oats weigh from 35 to 45 lbs. a bushel, yielding 8 lbs. meal for 14 lbs. corn; but the proportion of meal increases as the oats become heavier. In most parts of England they are mown, except when the crop is very strong. In the south, they are generally carried loose into the barn-yard; but in the north, where they are frequently cut with the sickle, they are tied in sheaves. Being liable to lose much by shaking, it is usual to cut oats before they are quite ripe.

The *Bean* (*Faba vulgaris*) is grown on almost all the strong lands under the plough. The quantity sown has probably continued stationary. According to the rotation pursued by our ancestors, when most of the land was in common fields, beans, preceded by wheat and followed by fallow, formed the whole course of husbandry. They were then, however, generally sown broad-cast; and, instead of benefiting the ground, were often of incalculable detriment. But in the modern system they are drilled and horse-hoed. Hence, they have become a very important crop, particularly on clay lands not suitable for turnips; heavy crops being not only raised, but the ground being, when suitable attention is paid to their culture, kept clean and in good order. Still, however, there are but few counties in which their culture is well conducted. Perhaps Gloucester, Kent, and Essex, may be specified as those where it is carried on with most judgment, skill, and success. In these and some other counties, they are drilled, and carefully horse and hand-hoed; affording a valuable crop, and the means of cleaning and fertilizing the land without resorting to a fallow. They generally precede wheat, and are put into the ground as soon in the spring as the weather will permit. The bean harvest in every part of the kingdom is late, generally ten days or a fortnight after all the white corn is cut down. The produce varies from about 20 to about 40 bushels an acre.

The *Pea* is commonly divided into two species — the *Pisum sativum*, or white pea of the gardens, and the *Pisum arvense*, or gray field-pea. The first is largely cultivated as a garden crop; and is grown to a considerable extent in the fields in Middlesex, Kent, Suffolk, and some other counties. Gray peas are pretty extensively grown in some parts of England; and they are the only sorts raised in the fields in Scotland. When grown as a field crop, the pea generally succeeds clover, rye, wheat, barley, or oats; but its proper place in the rotation is as a preparation for wheat. "The produce of the pea is very uncertain. Perhaps none of our cultivated crops presents such frequent failures. This arises partly from the diseases to which the plant is subject, and partly from the effects of late ripening and unfavourable weather. Thirty bushels an acre are held to be a good crop in most districts of this country. Perhaps the average of the kingdom does not exceed 20 bushels an acre." (*Low's Agriculture*, p. 274.). Peas ought not to be grown more than once in eight or ten years. If grown oftener, the crop frequently fails, and the land is covered with weeds. In Middlesex, the average produce of the early crops of green peas in the husk is estimated at from 25 to 30 sacks an acre, worth from 8*s.* to 18*s.* a sack. The average produce of green peas about Dartford, in Kent, is said to be 40 sacks an acre, and that as many as 50 sacks have been gathered. — (*Loudon*, 2d ed. No. 5213.).

The *Tare* (*Vicia sativa*) is principally grown as spring food for sheep, cattle, or horses. In the south of England it is sown either in the autumn or spring. That which is sown in the former is ready for cutting in April or May, but it does not come to perfection in the northern counties; that which is sown in the spring (March) is cut in autumn. Tares are a nourishing and excellent food for all sorts of cattle. Cows give more butter when fed with tares than with any other sort of food. Horses, also, are said to thrive better upon them than upon clover or rye-grass. Ten or twelve tons per acre is reckoned a large crop.

Buck Wheat (*Polygonum fagopyrum*) is seldom seen in England. A little of it is cultivated in Norfolk and some other counties, on light and poor soils, and allowed to ripen; in other parts it is ploughed down as a manure while in flower.

Clover (*Trifolium*). — Red, Dutch, and yellow clover, or trefoil, are very generally and largely grown; but to a greater extent, and with more success, in the eastern, southern, and northern counties, than in the western or midland. The culture of red clover after barley, as a preparation for wheat, is considered a mark of superior husbandry in those districts where it is best understood. Clover is rarely sown along with rye-grass, where hay is the object; but they are usually mixed when the land is intended to remain two or three years in pasture. In the south, and particularly in the vicinity of the metropolis, clover is frequently sown alone. Dutch, or white clover, is used principally in laying down land to grass. Owing to the comparatively small extent of old pasture, or meadow land, in Scotland, the Scotch farmers pay more attention than those of England to the culture of artificial grasses.

Sainfoin (*Onobrychis sativa*), not thriving well, except where the soil or subsoil is calcareous, is not generally met with. But it is extensively cultivated on the Cotswold Hills, and on the chalk soils of Dorset, Hants, Wilts, Hertford, Surrey, Sussex, and Kent. It generally remains for 8 or 10 years — a much longer period, according to A. Young, than it is found to do in France. It is made into hay, the after-crop being eaten by sheep or cattle.

Lucerne (*Medicago sativa*), nearly allied to sainfoin in its character, habits, and properties, though requiring a different soil, is not grown to any considerable extent, except in parts of Kent and Sussex.

Potatoes.—The culture of this important and valuable exotic (*Solanum tuberosum*) was first introduced, and it is still grown in the greatest perfection, in Lancashire and Cheshire; in the former about Altringham, and in the latter about Frodsham. Potatoes are also grown to a considerable extent in Yorkshire, particularly on the warp-land, or the soil on which the sediment of the rivers is deposited, and in Essex, Cumberland, and Cornwall. They are, however, less extensively used and cultivated in the western counties than in any other part of England. They are frequently grown on the light soils in the low parts of Wales. March and April are the usual season for planting, and October for taking up the crop. Wherever the husbandry is good, they are planted in rows, and are carefully horse-hoed and hand-weeded; being taken up either by the plough or by a particular kind of fork. The produce varies from 8 to 10 and 12 tons an acre. Potatoes are most commonly used as a preparation for wheat or oats, the latter being, in general, the best following crop. In Lancashire and Cheshire, however, they are not unfrequently planted on lands broken up from grass for the purpose.

Capacity of the Potato to support Population.—"There is a considerable discrepancy in the statements of the best authors as to the number of individuals that might be supported on an acre of land planted with potatoes, as compared with those that might be supported on an acre sown with wheat; some stating the proportion as high as 6 to 1, and others at only 2 to 1. According to Mr. Arthur Young, 1 lb. of wheat is about equal in nutritive power to 5 lbs. of potatoes. But Mr. Newenham, who has carefully investigated this subject, states, 'that 3 lbs. of good mealy potatoes are, undoubtedly, more than equivalent to 1 lb. of bread.'—*Newenham on the Population of Ireland*, p. 340.); and his estimate is rather above Mr. Wakefield's. Supposing, however, that 1 lb. weight of wheat is fully equal to 4 lbs. of potatoes, still the difference in favour of the superior quantity of food derived from a given quantity of land planted with the latter is very great. According to Mr. Young, the average produce of potatoes in Ireland may be taken at 82 barrels the Irish acre; which, at 20 stone the barrel, is equal to 22,960 lbs.; and this being divided by 4, to bring it to the same standard, in point of nutritive power, as wheat, gives 5,740 lbs. Mr. Young further estimates the average produce of wheat, by the Irish acre, at 4 quarters; which, supposing the quarter to weigh 480 lbs., gives in all 1,920 lbs., or about one third part of the solid nourishment afforded by an acre of potatoes.—(*Tour in Ireland*, Append. pp. 12, 24, &c. 4to. ed.). This estimate must, however, be somewhat modified when applied to Great Britain, the soil of which, while it is better adapted to the growth of wheat, is generally supposed not to be quite so suitable for the potato as that of Ireland. But it, notwithstanding, admits of demonstration, that, even here, '*an acre of potatoes will feed double the number of individuals that can be fed from an acre of wheat.*'"—(*General Report of Scotland*, vol. i. p. 571.).—(*Commercial Dictionary*, art. POTATOES).

Turnips (*Brassica rapa*, common turnip; *Ruta baga*, Swedish turnip).—The county of Norfolk was for a long time famous for its great breadth of turnips, and for the skill and success with which they were cultivated. At present, however, this useful and valuable root is grown, to a greater or less extent, in almost every county of England; but in a superior manner, and to a larger extent in Norfolk, Suffolk, Northumberland, and Lincoln, than any where else. The turnip culture seems to have made the least progress in Cheshire, Lancashire, and some of the south-western counties. In the best cultivated parts of Norfolk, Northumberland, and Lincoln, turnips are almost uniformly drilled. They are also partially drilled in other places; but broad-cast is still the most common mode of sowing them in the western parts of England. They mostly follow wheat or oats; but they occasionally, also, follow barley and peas. They are principally grown on light soils, serving, especially when drilled, the same purpose as a naked fallow. Turnips are, therefore, of peculiar value to a farm; for, besides enabling it to keep and fatten a much larger quantity of stock, and, consequently, to accumulate a much larger quantity of manure, they give a crop where there was none before, without diminishing in any degree the means of cleaning the land. Their produce, when cultivated in the broad-cast manner, varies from 5 to 15 tons an acre; the latter being reckoned a very good crop. In Northumberland and Berwickshire a good crop of white globe turnips, drilled, weighs from 25 to 30 tons; the yellow and the *Ruta baga*, or Swedish, a few tons less. It has been well observed by Mr. Brown, in his valuable *Treatise on Rural Affairs*, that the introduction of the improved turnip culture into the husbandry of Great Britain "occasioned one of those revolutions in rural art which are constantly occurring among husbandmen; and though the revolution came on with slow and gradual steps, yet it may now be viewed as completely and thoroughly established. Before the introduction of this root, it was impossible to cultivate light soils successfully, or to devise suitable rotations for cropping them with advantage. It was likewise a difficult task to support live stock through the winter and spring months; and as for feeding and preparing cattle and sheep for market, during those inclement seasons, the practice was hardly thought of, and still more rarely attempted, unless where a full stock of hay was provided, which only happened in very few instances. The benefits derived from turnip husbandry are, therefore, of great magnitude. Light soils are now cultivated with profit and facility; abundance of food is provided for man and beast; the earth is turned to the uses for which it is physically calculated; and, by being suitably cleaned with this preparatory crop, a bed is provided for grass seeds, wherein they flourish and prosper with greater vigour than after any other preparation."—(Vol. ii. p. 90.) The application of bone manure to the raising of turnips is one of the greatest of the recent improvements in agriculture. It has not only occasioned a great increase in the produce of this valuable root, but in the crops of corn and grass by which it is followed.

Cole, or *Rape* (*Brassica napus*), is cultivated either on account of its seed to be expressed for its oil, or as green food for sheep. That raised for crushing is principally produced in Yorkshire and Lincolnshire; while that raised for sheep is cultivated to the greatest extent in the southern and south-western counties, and in Northampton, Leicester, &c. It is seldom grown for either purpose north of Yorkshire, or in the western counties. The culture of rape for seed has been objected to on account of its supposed great exhaustion of the land; but Mr. Loudon says that, where the soil and preparation are suitable, the after-culture properly attended to, and the straw and offal, instead of being burnt, as is the common practice, converted to the purposes of feeding and littering cattle, it may, in many instances, be the most proper and advantageous crop that can be raised by the farmer. Where the plant succeeds well, and the season is favourable for securing the seed, it produces sometimes from 40 to 50 bushels an acre; but the produce is very various and uncertain. The leaves are scarcely surpassed, as green food for sheep, by any other vegetable.

Cabbage (*Brassica oleracea*) has been partially cultivated as food for cattle and sheep for several years; but the practice does not seem to be extending. Cabbages are principally grown in Suffolk, Leicester, and Lincoln. Mr. Brown affirms that their culture is much more hazardous, far less profitable, and attended with infinitely more trouble, than that of turnips. But when they are grown on soils too heavy for turnips, they may be an advantageous crop.

Mangel Wurzel, or *Beet* (*Beta vulgaris var.*), has of late years been extensively cultivated in the most improved districts. It is of great value as food for cattle, standing next to Swedish turnips in its feeding properties. It may be preserved in perfection in pits: the produce varies from 18 to 40 tons an acre.

This plant abounds in saccharine matter; and a large proportion of the sugar used in France and other parts of the continent is now prepared from beet-root. The extraction of sugar from beet was also beginning to be attempted in this country; but as it has been recently enacted, that all sugar made from it shall be subjected to the same duty as colonial sugar, the manufacture will, most probably, be discontinued.

Carrot (*Daucus carota*) has been long cultivated for the London market, and as food for farm horses, on the sandy soils of Suffolk; but its application as food for cattle is comparatively recent. It is also cultivated as a farm crop to a considerable extent in Worcestershire; Wolverly sands having been long famous for the growth of this root, and for the saving of carrot seed. For several years past, carrots have been cultivated on a large scale, and with much success, by Mr. Burrows, an intelligent Norfolk farmer. According to Arthur Young, the produce of an acre of carrots in Suffolk is, at an average, 350 bushels; but Mr. Burrows's crops have averaged as much as 800 bushels, which considerably exceeds the largest crop of potatoes. Horses are remarkably fond of carrots; and Mr. Loudon affirms that, if they be mixed with cut straw and a little hay, they will keep them in excellent condition for performing all kinds of ordinary farm labour. About 40 or 50 lbs. a day are allowed for each horse.

The *Parsnip* (*Pastinaca sativa*) resembles the carrot in its uses and the method of its cultivation; but requires a stronger soil, and is more nutritive. It is not raised any where in this country on a large scale except in Jersey and Guernsey, where it is extensively used in the feeding of cattle.

The following crops are generally confined to a very few parts. Canary seed, radish seed, spinach seed, &c.. are scarcely seen any where except in the Isle of Thanet, where they are raised in large quantities. Saffron, which was formerly cultivated in various parts of the kingdom, is now grown almost solely between Saffron-Walden, in Essex (which takes its name from this plant), and Newmarket, in a circuit of 10 miles. Another singular product of Essex is a kind of treble crop of coriander, carraway, and teazle; the two former on account of their aromatic seeds, the latter for its prickly heads, used by the manufacturers in raising the nap on woollen cloths. Teazles are also grown in some parts of the West Riding of Yorkshire; but neither there nor in Essex to nearly their former extent, in consequence of their being in a great measure superseded by the use of machinery. Madder and woad are grown, though not to any considerable extent, on the chalk hills of Surrey, near Banstead, and in West Kent: mustard, near Wisbeach, in the Isle of Ely, and in some parts of Essex: liquorice, principally in the neighbourhood of Pontefract, in the West Riding of Yorkshire. In Derbyshire, a good deal of land is planted with camomile. A considerable variety of medicinal plants are raised near Mitcham, in Surrey; among which are peppermint, pennyroyal, savin, angelica, horehound, camomile, wormwood, hyssop, poppy, lavender, and roses.

Flax and Hemp. — After the American war, government endeavoured, by means of bounties, to encourage and extend the cultivation of flax and hemp; but the bounties were soon withdrawn, bacause, as is said, they went to the landlords instead of the tenants; the former expecting an increased rent for their lands in proportion to the bounties given. But, supposing that the bounties had gone entirely into the pockets of the tenants, their withdrawal is not to be regretted. It is admitted, by the best informed agriculturists, that the culture of flax is, on the whole, decidedly less profitable than the culture of corn; and it would, therefore, be most impolitic to attempt to force the growth of the former rather than of the latter. The flax grown in England is raised chiefly between Bridport and Beaminster, in Dorsetshire; in the neighbourhood of Frome, Crewkerne, &c., in Somersetshire; at Upwell and Chatteris, in the Isle of Ely; in some parts of Lincolnshire; and on the strong lands of High Suffolk.

The *Hop* (*Humulus lupulus*) has long been cultivated in the southern parts of England, particularly in the neighbourhood of Canterbury and Maidstone, in Kent, where there is a larger extent of ground appropriated to its growth than in any other county. The quality of the hops raised round Farnham in Surrey, and in the adjoining parts of Hants, is, from better management, or other causes, so superior, that they always command the highest price: they are also grown in Herefordshire, particularly on the confines of Worcestershire; in the latter, in the vales of the Severn and the Team; in the vicinity of Stowmarket in Suffolk, and near Retford in Nottinghamshire, but in these two places only to an inconsiderable extent; in Essex about Castle Hedingham; and in some parts of Sussex. The hop is so much affected by changes of weather, blights, and other distempers, that its produce varies more than that of any other plant, being sometimes as low as 1 or 2, and sometimes as high as 15 or 20 cwt. an acre! In 1825, for example, the produce of the hop crop amounted to only 5,080,000 lbs., whereas in the following year it was 57,227,000 lbs.! The average produce during the 4 years ending with 1834 was about 30,000,000 lbs. In 1834, the land under hops in the different parts of England and Wales comprised an area of 51,274 acres, whereof there were in Kent 21,402 acres; in Sussex, 10,431½ ditto; in Hereford, 12,018 ditto; in Worcestershire, 1,849 ditto; in Wiltshire, 1,038, &c. During the same year the duty of *2d.* per lb. produced 329,941*l.* 10*s.*, showing that the crop had amounted to 39,592,980 lbs. Grounds planted with hops fetch a higher rent per acre than any other kind of land not possessed of some peculiar local advantages, bringing from *5l.* to *12l.* per acre; and about Farnham considerably more. From their great uncertainty, they are believed to be, speaking generally, a very unprofitable species of culture. They afford ample room for, and great temptations to, speculation, and are apt to divert the attention of the farmer to pursuits not very compatible with his peculiar business. Mr. Ellis, of Westbury Manor, in the Rochester collection, is the greatest hop-grower in the empire, having about 478 acres under this crop! He has sometimes employed, in the picking season, as many as 4,000 people! He gives but an unfavourable account of the business. The gradual increase of the quantity of land under hops would seem, however, to show that their culture is either more profitable than is commonly imagined, or that the supposed advantages attending it more than countervail its drawbacks.— (See *Report on Hops* by the Commissioners of Excise Inquiry).

Apples, Cider, &c.— There is scarcely a farm of any extent in the southern and south-western counties without an orchard attached to it, containing a stock of apple-trees sufficient to supply the farmer's family with cider. It might, in fact, be produced in most parts of the empire. The finer garden apples are not required for the production of cider. Those employed for this purpose are of the less improved and harsher kind, approaching somewhat to the wild apple; the goodness of the liquor depending more on the manner in which it is made than on the kind of fruit. Cider is not, however, made in large quantities for sale except in the counties of Devon, Hereford, Worcester, Gloucester, Monmouth, and Somerset; but in these the management of the cider orchards is an affair of considerable importance. Perry is made chiefly in Worcestershire; and the cider of Hereford and Gloucester is deemed superior to that of Devon. The quantity of cider annually manufactured has not been ascertained. Mr. Marshall supposed that the produce of Worcester, Gloucester, Hereford, and Monmouth, might, at an average, be reckoned at 30,000 hogsheads; of which Worcester was supposed to supply nearly 10,000 hogsheads, besides 1,000 hogsheads of perry. But there can be little doubt that the consumption has materially increased since the abolition of the duties. Exclusive of cider and perry, which are sent to all parts of the kingdom, the cider counties export large quantities of fruit, chiefly to the north. The average weight of fruit sent from Worcestershire alone, by the canals, to the north, is supposed to amount to about 1,600 tons: it has sometimes exceeded 2,000 tons. Kent is famous for its orchards of cherries and filberts. The former are common in most parts of the county; the latter are principally confined to the vicinity of Maidstone, where they extend over several hundred acres. We subjoin a Table.

TABLE, deduced from the Agricultural Reports, of the Average Produce per Acre of the Crops of Wheat, Barley, Oats, Rye, Peas, Beans, and Potatoes, in the different Counties of England and Wales.*

Counties.	Wheat.		Barley.		Oats.		Rye.		Peas.		Beans.		Potatoes
	Qr.	*B.*	*Qr.*	*B.*	*Qr.*	*B.*	*Qr.*	*B.*	*Qr.*	*B.*	*Qr.*	*B.*	*Bush.*
Bedford	3	0	4	0	4	0	3	0	2	4	2	4	300
Berks	2	4	4	0	4	0	3	0	3	0	4	0	—
Bucks	2	6	4	0	4	0	2	4	2	4	4	4	320
Cambridge	3	0	4	4	4	0	0	0	2	4	3	0	320
Chester	2	4	3	5	4	4	0	0	0	0	0	0	360
Cornwall	3	0	4	4	5	0	0	0	0	0	0	0	340
Cumberland	2	4	4	4	5	0	0	0	0	0	0	0	320
Derby	2	2	4	4	4	4	0	0	0	0	0	0	300
Devon	3	1	3	0	4	0	0	0	3	0	3	4	300
Dorset	2	0	3	4	4	0	0	0	0	0	0	0	300
Durham	2	5	4	1	4	4	3	1	3	1	3	1	100
Essex	3	0	4	0	4	4	3	0	2	4	4	0	200
Gloucester	2	0	3	0	2	4	0	0	0	0	0	0	—
Hants	2	4	3	6	4	0	0	0	3	4	3	6	250
Hereford	2	4	3	6	4	0	0	0	3	0	3	6	250
Hertford	2	4	4	0	4	4	3	0	2	4	3	0	320
Huntingdon	3	0	5	0	4	4	0	0	2	6	3	0	320
Kent	2	6	4	0	4	4	3	0	3	0	3	0	300
Lancaster	2	2	3	6	5	0	0	0	0	0	0	0	350
Leicester	2	4	4	0	5	0	0	0	3	0	3	0	300
Lincoln	3	0	4	0	6	0	0	0	2	4	2	4	320
Middlesex	3	0	4	0	4	4	3	2	4	0	4	0	320
Monmouth	2	2	3	4	4	1	0	0	3	1	3	1	150
Norfolk	2	4	4	4	5	0	3	0	3	0	2	4	300
Northampton	2	6	4	0	4	4	0	0	3	4	3	2	320
Northumberland	3	0	4	4	5	0	3	6	2	4	3	6	300
Nottingham	3	2	4	6	4	4	2	4	3	4	3	4	360
Oxford	2	4	3	4	4	4	0	0	2	4	4	0	280
Rutland	2	6	4	0	5	4	0	0	2	6	2	6	300
Salop	2	4	3	4	3	0	0	0	2	4	3	0	300
Somerset	2	4	3	4	4	0	3	0	2	4	3	0	240
Stafford	2	6	4	4	4	4	2	4	2	4	2	4	350
Suffolk	2	4	4	0	4	4	2	6	2	4	3	0	300
Surrey	2	4	3	6	4	0	2	4	2	4	3	0	250
Sussex	3	0	4	0	5	0	0	0	2	4	3	0	300
Warwick	2	5	3	4	5	0	3	0	2	4	2	4	150
Westmoreland	2	4	5	0	4	6	3	6	0	0	0	0	300
Wilts	2	4	3	6	4	0	3	0	2	6	3	2	240
Worcester	2	6	4	6	3	6	0	0	2	4	3	0	280
York	2	6	4	4	5	4	3	0	3	6	3	0	250
North Wales	2	0	4	0	4	6	0	0	0	0	0	0	200
South Wales	2	2	4	2	4	7	0	0	0	0	0	0	320
Average	2	5	4	0¼	4	3½	2	7¾	2	7	3	1¾	

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* We give this table as we find it, without in any respect vouching for its correctness. There are some obvious inaccuracies in the potato averages; and even the corn averagees are but little to be depended on. It may, however, assist the general reader in forming some notion of the productiveness of different crops.

SECT. IV. — *Agriculture of Scotland.*

Having dwelt at so much length on the agriculture of England, a comparatively short notice will suffice for that of Scotland.

In comparing England and Scotland together, it is evident, even to the most superficial observer, that a more severe spirit of economy is prevalent, in all that respects field operations, in the latter than in the former. In England there is not, generally speaking, that strict subserviency of the parts to the principal business of the farm that is observable in Scotland. In the latter, all the best cultivated farms appear as if the only thing their occupiers ever thought of was, how the greatest quantity of produce might be raised and sent to market, at the least expense. All that can forward this grand object is found in the highest state of perfection; but there is no outlay on any thing else. In England the factory system, if we may so call it, has made less way in agriculture. A greater extent of land is devoted to purposes of pleasure; hedges are kept up, though unnecessary, or even injurious, because of their beauty: more horses and labourers are maintained in proportion to the work to be done; and there is a much larger outlay on what is merely ornamental. Both systems have their exceptionable as well as unexceptionable points. The economy of the Scotch is carried in some respects to an excess; but the English have run much further into the opposite extreme; their expenditure upon useless horses, to notice only one item, being in the last degree prejudicial to the landlords, the farmers, and the public.

The grand characteristics of Scotch agriculture are, 1st, the nearly universal prevalence of leases of a reasonable endurance, and containing regulations as to management which, while they do not improperly shackle the tenant, prevent the land from being exhausted previously to the termination of the lease; 2d, the absence of tithes, and, in most cases, also of poor-rates, and of all oppressive public burdens; 3d, the prevention of assignment and subletting by tenants, and the descent of the lease to the heir-at-law; and, 4th, the general introduction of thrashing-machines and other improved implements, and the universal use of the two-horse plough and one-horse carts. These circumstances, combined with the extraordinary progress of manufactures, and the general increase of opulence and civilisation, which have created a proportional demand for the produce of the soil, and introduced improved habits and modes of living, seem to afford a satisfactory explanation of the wonderful progress of agriculture in Scotland since the middle of last century.

Agricultural Departments. — In the General Report, Scotland is divided into *nine* agricultural districts; but this seems to be an unnecessary multiplication. It may, perhaps, be sufficient to divide it into three: of these the first, or most southerly division, extends from the English border to the rivers Forth and Clyde. It contains a large extent of mountainous and pasture land. But extensive tracts in Berwickshire and the Lothians, on the east coast, are naturally fertile, and are farmed with a degree of skill, economy, and success, unequalled almost in any other part of the empire. There are also large tracts of fertile and well-farmed land in Lanark, Renfrew, Ayrshire, Galloway, and Dumfries; but the climate on the west coast is not so favourable, and agriculture is not so far advanced on that side the island as on the east. The second agricultural division stretches from the Forth and Clyde to the great chain of lakes connected by the Caledonian Canal, that runs from Inverness to the island of Mull. The mountains in this division are on a grander scale than in the southern division, and the proportion of waste land much greater. It, however, contains some of the finest land in the empire. The carse of Gowrie, stretching from Perth to Dundee, consists of the richest alluvial soil; but its agriculture is not equal to that of some other districts. Strathern, lying to the west of Perth, is also very fertile. Most part of the extensive county of Fife is arable, and is, in general, very highly improved. There are also very large tracts of fine land in Forfarshire and Angus; and smaller portions in Aberdeenshire and Moray. The third division of Scotland, or that which embraces the country lying to the north of the Caledonian canal and the lakes, is, with the exception of the eastern parts of Ross-shire, and a few patches beside, wild and mountainous. Black cattle, sheep, and wool, are the only agricultural products it furnishes.

Buildings. — Down to the close of the American war, the farm buildings in most parts of Scotland were mean and inadequate in the extreme. In the Lothians they were commonly ranged in a row, having the dwelling-house in the middle, with a barn at the one end and cattle houses at the other. In other parts, they were frequently huddled together without any sort of order. The walls were always low, in most instances of stone and clay, the roof being invariably thatch. The dunghill was universally opposite to the door; and so near it, that in wet weather it was no easy matter to get into the house with dry feet. The change that has taken place in these respects during the last half century, has been signal and complete. In none but the least accessible and least improved districts are any of the old houses now to be met with. Perhaps, indeed, the other extreme has not been sufficiently avoided; buildings having, not unfrequently, been erected that seem to be both larger and more expensive than necessary. The offices are mostly constructed in the form of a square. In some instances, the dwelling-house makes one of its sides; but in the better class of farms it is removed to some distance from the offices. It is generally two stories high, and is well, and sometimes handsomely, fitted up. Both houses and offices are almost always slated. The expense of buildings is uniformly defrayed by the landlord; but the tenant, for whose accommodation they are in the first instance erected, sometimes pays a per centage upon the money laid out upon them. Sometimes, also, the tenants undertake to carry the materials used in building.

Fences. — These, in many parts of Scotland, consist of dry stone walls; which, though destitute of beauty, make, when properly built, a capital fence. This species of inclosure seems to have originated in the south. Kirkcudbright and Wigtown were early subdivided with excellent stone dykes, that are now celebrated all over the kingdom by the name of "Galloway dykes." They are of very various height, built, and degrees of goodness; but the best are built double to a certain height, when they are capped with broad flat stones projecting a little on each side, over which others are usually laid single; but sometimes those laid over the cap-stone are made to lock firmly together. The best dykes vary from 5½ to 6 feet in height; and, where they have been carefully founded, well built, and constructed of good stones, they make a most excellent and a very durable fence. Examples are not rare of their standing for 60 or 70 years without receiving almost any repair. In a few instances they have been found at above 100 years of age, in a state of perfect preservation! But, unless they be of superior material and workmanship, they seldom last more than from 25 to 30 years. Most of the dry stone walls now to be met with all over Scotland have been built, sometimes with more, and sometimes with less, success, after the Galloway model.*

Implements. — In respect of farming implements, Scotland has very much the advantage over England. The improved Scotch plough is every where met with in the agricultural districts, and is uniformly drawn by two horses driven by the ploughman. Iron harrows are common. Thrashing-machines are introduced far more extensively than in England; and there is hardly, indeed, a considerable farm in any part of the country without one. The Scotch labourers have never been so absurd as to attempt to advance their interests by destroying those valuable engines.

Crops. — In the lowland districts, the practice of taking two corn crops in succession is almost entirely abandoned. Wheat is raised to the greatest extent in Berwickshire, the Lothians, Perth and Fife; but, speaking generally, the climate of Scotland is not so well suited for the growth of wheat as that of the southern counties of England. It is, however, worthy of remark, that about the best British wheat brought to the London market, in 1831, came from the shores of the Moray Frith. The climate is particularly well suited for the growth of oats; and this no doubt is one of the principal causes of their being far more extensively cultivated in Scotland than any other species of grain, perhaps in the proportion of 7 or 10 to 1. The potato oat is raised, to the exclusion of most other varieties, in almost all the best cultivated districts. On inferior land, dun oats, and in some exposed Highland districts, improved black oats are raised. The produce varies with the soil, preparation, &c.; but, in general, it is greater than in England, and the grain is heavier. Sixty bushels an acre are reckoned a very good crop, and twenty-five an indifferent or bad one. Oatmeal formed, at no very distant period, the principal part of the food of all classes except the very highest: but wheaten bread is now very generally used in towns and villages, and even in country districts. Oatmeal is still, however, in extensive demand. Barley, or rather bear or bere, is also largely cultivated. The culture of beans is confined to a few districts.

Turnips and potatoes are cultivated with success in most of the lowland districts of Scotland. They are uniformly, almost, planted in drills, hand-hoed, and horse-hoed. The raising of potatoes for the London market has recently been very extensively practised in some of the eastern counties of Scotland, and has been found sufficiently profitable, notwithstanding the crops are less abundant in this part of the empire than in England or Ireland. The turnip husbandry is nowhere, perhaps, so well understood, or practised on so large a scale, as in East Lothian and Berwickshire; but it has latterly been much extended and improved in all parts of the country. Clover and rye grass are more extensively raised in Scotland than in England.

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* There is an excellent account of the Galloway dykes, with judicious remarks on their construction, in Smith's *Survey of Galloway*, pp. 80—93.

Grasses. — In the management of meadows, the saving of hay, the selection of cattle, and all that respects grazing husbandry, Scotland is considerably behind England. During the late war, indeed, great efforts were made by several individuals to improve the breeds of live stock, which have been attended with a corresponding degree of success. Dairy husbandry is principally carried on in Ayrshire, where Dunlop cheese is made, and in Renfrewshire; and is beginning to be introduced into Galloway, Dumfriesshire, and other counties.

SECT. V. — *Grazing Husbandry of Great Britain.*

It will be afterwards seen, that a full half or more of the arable land of England is applied to grazing husbandry, or to the rearing and feeding of cattle, sheep, &c., for the dairy and the shambles. In Scotland, a larger proportion of the arable land is under crop than in England; and in Ireland, where pasture land preponderated very much half a century ago, the proportion in tillage is now decidedly the largest. Various circumstances have conspired to account for the prevalence of pasture in England. Is is partly, no doubt, ascribable to the humidity of the climate, and the natural adaptation of the soil to bear luxuriant crops of grass; partly to the taste of the inhabitants for butchers' meat; and partly, also, to the serious obstacle opposed by tithe to the extension of tillage. We have neither time nor means to compare and weigh the conflicting statements put forth by the advocates of grazing and of tillage. That system of agriculture is generally admitted to be the best in which they are judiciously combined. We believe, however, that few things in rural economy require more mature consideration than the breaking up of old pasture land; and that many estates have been materially injured by the extent to which this was done during the period of high prices from 1809 to 1814. It is needless, however, on a point of this sort, to seek to establish, by reasoning, which system of management is best, or which is worst, that being a matter that can only be ascertained experimentally. If greater profits, all things considered, be made by keeping land in pasture, than would be made by bringing it under the plough, it is not for the interest of the landlord, the farmer, or the public, that it should be so brought. The true way to extend tillage is to remove tithes, and, as far as possible, the other burdens that affect the cultivators of the land. This would tend to make that balance of profits, which seems at present pretty equally poised, incline in favour of tillage; and, if so, its progress would be insured.

The richest grazing lands in England are, the vale of Aylesbury in Buckinghamshire, the marsh lands of Somersetshire, the fens of Lincolnshire, Huntingdonshire, &c., Romney Marsh, in Kent, and the midland counties of Leicester, Northampton, &c. In Cheshire and Gloucester there is a very great extent of rich pasture land, chiefly appropriated to the dairy. The natural fertility of some of the grazing districts, and the fertility bestowed on others by the skill, capital, and industry of the farmer are quite astonishing. On the rich grazing lands of Lincoln an acre will feed a bullock and 5 or 6 sheep during summer, and 3½ sheep, or 7 sheep to 2 acres during winter.

Hay made in Britain consists sometimes of natural grasses, sometimes of clover and rye-grass, or of clover only, and sometimes of saintfoin. The first description, or, as it is commonly called, meadow hay, is principally produced in the western counties of England, where comparatively little clover is sown, and in the pastoral districts of Scotland. Middlesex, which has nothing else to boast of in respect of agriculture, has carried the art of making meadow hay to the greatest perfection; particularly in the districts immediately adjoining the metropolis. Mr. Middleton states that 70,000 acres of the metropolitan county consist of upland meadows and pastures, chiefly clay. He then adds, "This large district would have been of little or no value in a state of aration. The difficulty of tilling it; the expensive teams that must have been employed on it; the few months in every year when it could be ploughed with success; and the uncertain produce of such a soil, are circumstances which would have kept down its value to little or nothing; — but mark the difference. Laying it down to a permanent grass has been the means of it annually producing, at a medium of seasons, a ton and a half of hay per acre, of the highest quality, for the feed of horses; and of enabling the farmer to pay a much higher rent for it than they can do for the best land in a state of aration."—(*General View of Middlesex*, 2d ed. p. 287.) Clover hay, either pure or mixed with rye-grass, is most common in the southern, eastern, and northern counties of England, and in the cultivated districts of Scotland. Saintfoin hay is confined to those districts which have a calcareous soil; for it is on these only that it can be profitably grown. The usual weight of a crop of meadow hay is from 1 to 1½ tons per acre; of clover hay from 1 to 3 tons; and of saintfoin from about 1 to 2 tons. In those counties in which the soil is dry, and the climate peculiarly favourable, clover is sometimes permitted, after it has been once cut, to stand for the purpose of saving its seed; but there is great uncertainty as to its produce. Clover hay generally sells 20 per cent. higher than meadow hay, or than clover and rye-grass mixed.

SECT. VI.—*Live Stock of Great Britain.*

Horses.—Of the various animals domesticated by man, and made subservient to his purposes, the horse is by far the most important. In England horses are used to a much greater extent than in any other country. Oxen, as has been already seen, are but little employed amongst us in farm labour; and, besides the horses kept by the agriculturists, vast numbers are employed in the conveyance of goods and passengers in waggons, stage and mail coaches, &c., while a still greater number are kept by private individuals as saddle or carriage horses, hunters, racers, &c. Most manufacturers, warehousemen, wharfingers, coal-merchants, &c. in extensive business, employ a greater or smaller number of horses. There are, indeed, but few industrious pursuits in which they are not in some way serviceable; and many of the greatest importance could not be carried on without them; while they, at the same time, contribute, in no ordinary degree, directly to augment our comforts and enjoyments.

Breeds of Horses.—There are in England many varieties of this noble animal, differing in size and other qualities, but all admirably adapted for the purposes for which they are intended. The largest horses are bred in the midland counties, particularly Northampton and Leicester. They are generally of a deep black colour, and are peculiarly well fitted for draught. This breed is understood to have been formed, or, at least, brought to its present perfection, by means of stallions and mares imported from the Low Countries by the celebrated Lord Chesterfield and others. They are extremely docile; and, from their great strength and weight, are able to move an immense load. The principal demand for heavy horses is in London, where they are seen in full perfection in the dray-carts of the brewers. They are altogether very fine and useful animals, though said by some to be deficient in spirit. Yorkshire has been long celebrated for its breed of horses, both for the saddle and for draught, but especially the former. The Cleveland bays are esteemed one of the best breeds in the empire. Coach, chariot, and stage-coach horses are derived, many of them, from the Cleveland bays, improved by an admixture of blood. Suffolk has a peculiar breed of very valuable farm horses: they are short, well-compacted, and active. Much pains has been taken in improving this breed, so as to render them fit for heavy as well as light work. The best show of Suffolk horses is at Woodbridge Lady-day fair. Some of the finest stallions and mares have brought very high prices. The old English road horse, a valuable breed, and particularly serviceable before roads began to be improved, for their capacity for carrying loads, is now nearly extinct. The Clydesdale horse has long been in high esteem in Scotland and the north of England; and, for husbandry purposes, is probably not excelled by any other British breed. The Welsh horse is small and active, and bears a strong resemblance to the best native horses of the Highlands of Scotland. The genuine Galloway breed, so called from the province of that name in Scotland, is now rarely met with. It is somewhat larger than the Welsh horse, hardy, well adapted for the saddle, and distinguished by a peculiar smallness of the head and neck, and cleanness of bone. Galloway is now, however, used as a term to designate any horse between the pony size and the hack. The *ponies* and *shelties* of the Highlands and islands of Scotland are the smallest animals of the kind in the empire. They are the same with the Norway breed: the best of them being handsomely shaped, active, sure-footed, and capable of enduring much fatigue. Hunters and hackneys are now principally derived from the crossing of horses of entire blood with select mares of the native breed. Their speed has been, in consequence, a good deal increased; but what they have gained in this respect they are said to have lost in strength and bottom. The old English hunter is nearly extinct. Cavalry horses are found among the larger sort of hackneys: they are reckoned equal, if not superior, to those of almost any other country.

The race-horses of England are descended, in a nearly right line, from the Arabian, the Persian, and the Barb. Their breeding and training have been attended to with the utmost care; and the best English race-horses are now, perhaps, unrivalled for symmetry, swiftness, and capacity of exertion. The feats performed by some of them have been truly astonishing. Bay Malton ran, at York, 4 miles in 7 minutes 43 seconds: Childers went sometimes at the rate of 82½ feet in a second! and the performances of many others have been hardly less wonderful. No inconsiderable part of the improvement in some of the other breeds has been owing to judicious crosses with race-horses; and the influence which proper care in breeding, training, &c. was seen to have on the latter, made similar attentions be paid, in a greater or less degree, to the breeding and training of carriage, draught, and saddle-horses.

With the exception of the Arabs, there is, perhaps, no people more attached to their horses than the English, or who take greater pleasure in having them well kept, and in good order. London is, in fact, the paradise of horses. Rapid driving in stage-coaches is the severest work to which they are subject; but, owing to the shortness of the stages, and the high keep of stage-coach horses, it is less destructive than might have been supposed.

It has been justly observed, that "one will hardly be at a loss to determine the character of a farmer from the condition of his horses. Very fine high-bred horses, exhibiting an appearance of being prepared for the market, may rather suggest the idea of idleness than of labour; but, on the other hand, lean, spiritless creatures, worn out by toil and hunger, are the certain indications of a bad farmer, of one who is not thriving, and who does not deserve to thrive. The man who uses bad instruments cannot have his work well done; and one important and primary step towards good farming is to keep the labouring stock in good condition. Horses regularly fed and regularly wrought will perform a great deal of labour without falling off either in strength or appearance: it is of great importance, therefore, to distribute the labour as equally as possible through the various seasons of the year; and if, as must sometimes be the case, an extraordinary exertion ought to be made, they are in a proper condition for it. When horses do fall off it requires much more to restore them than might have kept them in a good state."—(*Somerville's Agriculture of East Lothian*, p. 197.)

Number and value of Horses in Great Britain.—The number of horses used in Great Britain for different purposes is very great, though less so, perhaps, than has been generally suposed. Mr. Middleton (*Survey of Middlesex*, 2d ed. p. 639.) estimated the total number of horses, in England and Wales, employed in husbandry at 1,200,000, and those employed for other purposes at 600,000. Dr. Colquhoun, contrary to his usual practice, reduces this estimate to 1,500,000 for Great Britain; and, in this instance, we are inclined to think he is not very wide of the mark. A *Parliamentary Paper* (No. 688. sess. 1830.) gives an account of the number of the various descriptions of horses in England and Wales which paid duty in 1814, when those used in husbandry were taxed; and the numbers, when summed up, amount to 1,204,307: but this account does not include stage-coach, mail-coach, and hackney-coach horses, nor does it include those used in posting. Poor persons, keeping only one horse, were also exempted from the duty, as were all horses employed in the regular regiments of cavalry and artillery, and in the volunteer cavalry. In Mr. Middleton's estimate, already referred to, he estimated the number of post-chaise horses, and of mail, stage, and hackney-coach ditto, at 100,000; and, supposing this to have been nearly accurate at the time, their number may now be taken at 125,000 or 130,000. The horses in Scotland, engaged in the business of agriculture, were estimated to amount, in 1814, to 243,489. — (*General Report of Scotland*, Appendix ii. p. 185.) On the whole, allowing for the increase that has taken place of late years, it may be fairly estimated that there are, in Great Britain, 1,500,000 horses employed for various purposes of pleasure and utility. They may, probably, be worth, at an average, from 12*l.* to 15*l.*, making their total value from 18,000,000*l.* to 22,500,000*l.* sterling, exclusive of the young horses.

Expense of feeding Horses. — *Land required for their Maintenance.* — The expense of horses depends partly on their size and partly on the purposes for which they are kept: partly on the situation where they are kept, and partly on the condition in which they are kept. Hence, the yearly expense of the keep of a horse has been estimated at almost any sum from 10*l.* to 50*l.* Farm horses, properly kept, and in good condition, may require, for their maintenance during a year, as follows: —

Oats, 10 quarters.
Soiling, 1 acre of clover, and rye-grass, and tares.
Hay, part of October and November, March, April, and May, 1¼ ton.
Straw, for other 4 months, half the price of hay.
Potatoes, yams, or Swedish turnips ¼ acre.

The extent of land required for a horse's maintenance, supposing the soil to be of a medium quality, may be about 5 acres; that is, for oats 3 acres, soiling 1, and 1 more for hay and roots. On rich soils 4 acres will be sufficient; but on poor soils, and wherever horses are kept at pasture, the produce of 6½ or 7 acres will be consumed by 1 of them, when properly worked. The straw of about 2 acres must be allowed for fodder and litter, the last of which has not been stated above; because, at a distance from towns, what is allowed for litter must, at any rate, be converted into manure. If 60 acres, therefore, should be assumed as the average extent of land that may be kept in cultivation by 2 horses, according to the best courses of modern husbandry, the produce of 10 acres of this will be required for their maintenance; or, in other words, a horse consumes the produce of 1 acre out of every 6 which he cultivates, according to a 4 or 6 years' course; and something more than 1 acre out of every 5 which he ploughs annually. — (*General Report of Scotland*, vol. iii. p. 192.)

Cattle.

Britain has been distinguished from the earliest period for the excellence of her pastures, and the preference by the inhabitants of stock-husbandry to tillage. Cæsar represents the ancient Britons as possessing large herds of cattle (*pecoris magni numerus*), and living principally on milk and flesh (*Lacte et carne vivunt*, De Bello Gallico, lib. 5. §§ 13, 14.); and no period has since elapsed in which the same thing might not have been affirmed of their descendants. This seems to be principally owing to natural causes. "The climate of Great Britain is, above all others, productive of the greatest variety and abundance of wholesome vegetables, which, to crown our happiness, are almost equally diffused through all its parts: this general fertility is owing to those clouded skies which foreigners mistakenly urge as a reproach on our country; but let us cheerfully endure a temporary gloom which clothes, not only our meadows, but our hills with the richest verdure. To this we owe the number, variety, and excellence of our cattle, the richness of our dairies, and innumerable other advantages." — (*Pennant's British Zoology*, art. Ox.)

Though the extensive variety of breeds of cattle that exist amongst us has, no doubt, been principally caused by differences of situation and pasture, it has, also, been partly caused by accidental and intentional intermixture. To describe these varieties, or even to enumerate them in detail, would far exceed our limits. They have been intermingled in every possible way, and run into each other by almost imperceptible gradations. They may, however, be divided, with sufficient precision for our purpose, into the four classes of *middle-horned*, *long-horned*, *short-horned*, and *polled*. We shall merely glance at a few of the more celebrated varieties of these great classes.

North Devonshire Breed. — This is supposed to be an aboriginal British breed: the peculiar district in which they are found not having been much occupied by either the Romans or Saxons, the inhabitants preserved the habits, practices, and stock of their ancestors comparatively pure. Devonshire cattle are of a high red colour, with horns of middle size: their hair is short and curly, and their hide thin and flexible: they are active, admirably calculated for draught, fatten easily, and afford excellent beef. Weight of the cows from 30 to 40 st., of the oxen from 40 to 50 st. As milkers they are inferior to the long and short-horned breeds. The Herefordshire cattle are obviously descended from the same stock as the North Devons; but, as compared with the latter, they are of a larger size, a darker red colour: their faces, throats, and bellies are white, hair thicker, hides harder, and, fatten on coarser and more deficient pastures. Though stronger, they are not so active as the Devons; and they are inferior to them as milkers.

The old Gloucester breed of red cattle, supposed to be a variety of the Devonshire breed, is now rarely met with. But the cattle of Sussex closely resemble those of North Devon, and are evidently of the same stock. Mr. Youatt says, that "the Sussex ox holds an intermediate place between the Devon and the Hereford, with all the activity of the first, and the strength of the second, and the propensity to fatten, and the beautiful fine-grained flesh, of both. When the Sussex has been crossed with the Devons, a lighter breed has resulted; but not gaining in activity, while it is materially deteriorated in its grazing properties."—(*Cattle, their Breeds, Management, &c.* p. 41.) This breed is principally met with in Sussex and Kent.

The Lancashire or Long-horned Breed.— So called from the enormous length of their horns, which bend downwards. The earliest seat of this valuable breed is said to have been the district of Craven, in the West Riding of Yorkshire, and the immediately contiguous parts of Lancashire; but they are believed to be originally of Irish extraction. They are of various colours, of a large size, hardy, and have long been extensively diffused. It was on this breed that Bakewell principally tried his experiments in breeding; and the result was the celebrated New Leicester or Dishley variety. But, since Mr. Bakewell's death, the fame of this variety has not been supported; and it has been at many places, and even at Dishley itself, nearly superseded by the short-horned or Teeswater breed. But, notwithstanding this circumstance, it is certain that the efforts of Bakewell conferred great and lasting advantages on Lancashire, Staffordshire, and the midland counties in general; the cattle of which, consisting principally of long-horns, have been materially improved by his exertions, influence, and example.

The Short-horned Breed includes the varieties known by the names of the Holderness or Yorkshire, Teeswater or Durham, and Northumberland breeds. The improved Teeswater is, at present, deservedly held in very high estimation. Bulls and cows from this stock, purchased at exceedingly high prices, are spread over all the midland and northern counties of England, and the border counties of Scotland. This breed unites the supposed incompatible qualities of being superior milkers and of fattening rapidly. The beef is excellent; and, from its great thickness, which makes it retain the juices for a lengthened period, it is peculiarly fitted for the victualling of ships engaged in long voyages.

The breeds of Fife and Aberdeen, belonging to the class of middle-horns, are amongst the most valuable of those of Scotland. Cows of the genuine Ayrshire or Cunningham breed are particularly celebrated as milkers. In their native country each cow is supposed to yield at an average about 600 gallons a year of milk; and, as 3½ gallons produce 1½ lbs. of butter, the average annual yield of a cow may be estimated at 257 lbs. butter. It is said, however, that, when Ayrshire cows are sent to England, they lose their superiority as milkers, and begin to accumulate flesh. But, in their capacity to fatten easily, they are very inferior to the Highlanders, the Galloways, and the improved short-horns. The cattle of the Highlands, one of the aboriginal breeds, also belong to the middle-horns. They are divided into several varieties, of which the Argyle or western variety is decidedly the best;

but, in consequence of the coarse and scanty pasture, the rugged nature of the country, and the severity of the climate, they are *all* small, active, and hardy. Their beef, when fattened on the rich pastures of the low country, is beautifully grained, and is, indeed, the very best that is brought to table. The number of cattle in the Highlands has been materially diminished within the last 30 or 40 years, in consequence of its being found more profitable to raise sheep.

The Welsh cattle, one of the indigenous British breeds, mostly belong to the class of middle-horns. They are larger than the cattle of the Highlands, but not so hardy; and their beef, though preferred by some, is not generally allowed to be so good. The Glamorgans are the largest of the Welsh varieties. Recently they have been crossed with the Ayrshire breed; and the mixed breed, thence resulting, are found to yield a greater quantity of milk than the old Glamorgans, at the same time that they are hardier, and can be kept at a good deal less expense.

Polled Breeds.—The most celebrated of the polled breeds is found in the province of Galloway, including the counties of Wigtown and Kirkcudbright (see *antè*, p. 274.), in the south of Scotland. The prevailing colour is black or brindled. The weight of bullocks, at 3 or 3½ years old, when they are driven to the south, may be estimated at about 40 st. avoirdupois. When fattened in England they have sometimes weighed from 80 to 100 st. They have great hardiness of constitution; and, when full fed, there is, perhaps, no breed that sooner attains to maturity. Their beef is second only to that of the Highlanders. They do not give much milk, but what they do give is of a superior description. Mr. Mure, of Grange, near Kirkcudbright, a very intelligent and skilful agriculturist, has reared some of the finest specimens of this valuable breed. From 18,000 to 25,000 Galloway cattle used annually to pass through Dumfries, principally on their way to Norfolk and Suffolk, where they were fattened with turnips; but they are now, not unfrequently, fattened at home, and sent by steam to Liverpool.

The cattle of Suffolk are said by Culley to be a variety of the Galloway breed. They used to be called *Suffolk duns*, from their dun colour; but this is now generally regarded as a mark of inferiority; the prevailing and most esteemed colours being red and white, brindled, and a yellowish cream-colour. They differ from their progenitors, the Galloways, in yielding large supplies of milk, 6 gallons a day not being an unusual quantity; but the yield of butter is not in proportion. They do not fatten so easily as the Galloways; and are rarely bred for the mere purpose of grazing.

Wild Cattle, once so common in Britain, are now found only at Chillingham, in Northumberland, and Hamilton, in Scotland. They are long-legged, cream-coloured, with black muzzles, and about the middle size, very fierce and wild. Horns fine, white with black tips, and bent upwards. Some of the bulls have thin upright manes, about an inch and a half or two inches long. On being approached, the herd instantly take to flight, and gallop away at full speed; but, wheeling round at a certain distance, they advance in a threatening manner towards those by whom they have been disturbed. When within 40 or 50 yards they again set off at full speed; and, again wheeling round, advance nearer to the object of their alarm, till, on the least motion being made, they set off as before, to advance afresh. They continue to repeat this sort of retreat and advance, but each time come nearer and look fiercer, till most persons think fit to retreat, without provoking them to extremities. When any one happens to be wounded, or is grown weak or feeble, through age or sickness, the rest of the herd set on it, and gore it to death. They never associate with the tame species, nor come near a house, unless constrained by hunger in very severe weather.

Improvement in the Breed of Cattle. — No efforts for this purpose seem to have been made with judgment, or properly persevered in, till after the middle of last century, when Mr. Bakewell, of Dishley, Leicestershire, and Mr. Culley, of Northumberland, commenced their operations. The success by which their efforts were attended roused a spirit of emulation in others; and the rapid growth of commerce and manufactures, since 1760, having occasioned a corresponding increase in the demand for butchers' meat, improved systems of breeding and improved breeds have been generally introduced.

The introduction and universal extension of the turnip and clover cultivation has had, in this respect, a most astonishing influence; and has wonderfully increased the food of cattle, and, consequently, the supply of butchers' meat.

It is stated, in the First Report of the Select Committee of the House of Commons on Waste Lands (printed in 1795), that cattle and sheep had, at an average, increased in size and weight about *a fourth* part since 1732; but there seem to be good grounds for supposing that the increase had been much more considerable than is represented by the committee. According to an estimate framed by Dr. Davenant, in 1710, the average weight of the *nett* carcass of black cattle was then 370lbs., of calves 50lbs., and of sheep only 28lbs.; but, according to Sir F. M. Eden (*Hist. of the Poor*, vol. iii. App. p. 88.), and Mr. Middleton (*Agric. of Middlesex*, 2d ed. p. 541.), the weight of the carcass of bullocks, killed in London, is now, at an average, 800lbs., calves 140lbs., sheep 80lbs., and lambs 50lbs., including offal; and, deducting the latter, the nett weight of the carcasses is nearer a half than a fourth greater than the weight assigned by Davenant.

It may be worth while, however, to remark, that much injury has arisen from injudicious attempts to improve native breeds of cattle. This has generally been occasioned by endeavouring to increase their size, which is always determined by *natural causes*, such as the climate, the quantity and species of food the animals can readily obtain, &c. In point of fact, too, the size is quite an inferior matter. The grand object, that ought to be kept steadily in view by the prudent agriculturist, is the obtaining of the greatest possible return for his outlay; and he will prefer that kind of stock, and that breed of any kind, which will pay him best for the food consumed. The value to which an animal may be ultimately brought is a subordinate consideration; the profits of breeding, as of every thing else, being determined, not by the absolute price of the produce, but by its price as compared with the expenses incurred in bringing it to market. It is only where food is abundant in quantity, and may be procured without much fatigue, that large animals, if of a good breed, may be safely preferred to those of a more moderate size. A notion has been pretty prevalent that, in breeding, the larger males ought to be preferred; but this is believed by the best judges to have been productive of much mischief. The principal improvement in the breed of race and saddle-horses is said to have been effected by the introduction of Barbary and Arabian stallions, of a comparatively small size; and, in heavy draught horses, by the introduction of mares from Flanders. Mr. Culley's opinion is, that "of all animals, of whatever kind, those which have the *smallest, cleanest,* and *finest bones* are, in general, the best proportioned, and covered with the best and finest-grained meat. I believe they are also the hardiest, and healthiest, and most inclinable to feed; able to bear the most fatigue while living, and worth the most per lb. when dead." — (*Observations,* p. 222.) It is certain that animals, whether originally too large or too small, will gradually accommodate themselves to the size best adapted for their pastures; but while the larger animal becomes unhealthy, and degenerates in its form and valuable properties, the smaller animal increases in size, and improves in every respect.

It should be observed that the breeds of cattle and sheep differ according to the purposes to which they are to be applied. A breed of cattle equally well adapted to the butcher, the dairymaid, and the plough or cart, is a *desideratum* nowhere to be found. It would seem, too, that very fine wool cannot be obtained from sheep that are well formed and fat. The farmer must select his stock according to the objects he has in view; breeding only from the best animals, and carefully checking any tendency to defect; which, if it exist, though but in a very slight degree, in both parents, will, in general, preponderate in their produce. — (*Loudon's Encyclopædia of Agriculture,* §§ 2020—2065.)

Number of Head of Cattle in Great Britain. — It would, on many accounts, be very desirable to have an accurate estimate of the number and value of the stock of cattle in Great Britain, and of the proportion annually killed and made use of; but, owing to the little attention that has been paid to such subjects in this country, there are no means of arriving at any conclusions that can be depended upon. The following details may not, however, be unacceptable.

Arthur Young has given, both in his *Eastern* and *Northern Tours,* estimates of the number and value of the different descriptions of stock in England. They differ widely in their results; but, without attempting to explain these, Mr. Young gives, in the second part of his *Political Arithmetic* (p. 28.), an estimate of the stock of England, in 1779, being the average of those in the *Tours.* This is, most probably, nearer the truth than either of the separate estimates on which it is bottomed; though even it can be regarded only as a very rude approximation: —

Cows - - -	1,039,754
Fatting beasts - -	758,425
Young cattle - -	1,571,308
Total -	3,369,487

In the same estimate Mr. Young sets down the number of "draught cattle," including, not only the horses, but also the oxen, employed in husbandry, at 927,610. We have no means of accurately separating between horses and oxen; but, probably, as more oxen were then employed in husbandry than at present, we may estimate the latter at 150,000; so that, on this hypothesis, the total stock of cattle, in England and Wales, in 1779, would be 3,519,487.

Notwithstanding the increase of tillage, there can be no doubt, from the greatly increased demand for beef, and the extension of the turnip culture, that the stock of cattle in the country has been materially increased in number as well as weight since 1779. Different opinions have been pronounced as to this increase; but, taking it at 600,000, and adding to the numbers for England and Wales 1,100,000 for the cattle of Scotland (*General Report of Scotland*, iii. Addenda, p. 6.), we shall have about 5,220,000 as the total head of cattle of all sorts in Great Britain. The common estimate is, that about a *fourth* part of the entire stock is annually slaughtered; which, adopting the foregoing statement, gives 1,305,000 head for the supply of the kingdom; a result which all we have heard inclines us to think is pretty near the mark.

There are no accounts as to the number of Irish cattle on which any dependence can be placed. There is a large export of cattle and beef from Ireland to this country; but the home consumption is comparatively inconsiderable.

Dairy. — The business of the dairy is carried on to a great extent, and with much success, in England; and it is, also, prosecuted to a considerable extent in Scotland and Ireland. The principal products are milk, butter, and cheese.

Milk is only raised for direct sale in the immediate vicinity of large towns, where it forms a very important article. Mr. Middleton estimates (*Survey of Middlesex*, 2d ed. p. 419.) that, in 1806, no fewer than 8,500 milch cows were kept for the supply of London and its environs with milk and cream; and he estimates the average quantity of milk obtained from each cow at *nine quarts* a day, or 3,285 quarts a year; leaving, every deduction being taken into account, 3,200 quarts for marketable produce. But Mr. Youatt, in his valuable work on cattle, their breeds, &c., estimates the number of dairy-cows, at present kept in London and its environs, at 12,000; affording, on Mr. Middleton's hypothesis, an annual supply of 38,400,000 quarts of milk. Now, as milk is sold by the retailers at from *3d.* to *4d.* a quart, after the cream is separated from it, and as the cream is usually sold at from *2s. 6d.* to *3s.* a quart, and there is reason to suspect that a good deal of water is intermixed with the milk, we should hardly be warranted in estimating that the milk, as obtained from the cow, is sold at less than *5d.* a quart, which gives 800,000*l.* as the total price of the milk consumed in the city and its immediate vicinity. In most other places milk is a good deal cheaper; but, as it is, in consequence, more liberally consumed, the great expenditure on this article, which, to a cursory observer, might seem of little importance, will be obvious.

Butter is very extensively used in Great Britain. That produced in Epping Forest and Cambridgeshire is in the highest repute in London. The cows which produce the former feed, during summer, in the shrubby pastures of the forest, and the leaves of the trees, and numerous wild plants which abound in it, are supposed to improve the flavour of the butter; probably, however, it owes more to superior dairy management, as the butter preserves its character during the time the cows are removed from the forest. It is brought to market in rolls, from 1 to 2 feet long, weighing a pound each. The Cambridgeshire butter is produced from cows that feed one part of the year on chalky uplands, and the other on rich meadows or fens: it is made up into long rolls, like the Epping butter, and is generally salted or cured before being brought to market. The London dealers, having washed it, and wrought the salt out of it, frequently sell it for Epping butter.

The butter of Suffolk and Yorkshire is often sold for that of Cambridge, to which it is little inferior. Mr. Youatt says that 25,000 cwt. (1,250 tons) are annually sent from the former to London. Somerset butter is thought to equal that of Epping: it is brought to market in dishes, containing half a pound each; out of which it is taken, washed, and put into different forms by the dealers of Bath and Bristol. The butter of Gloucestershire and Oxfordshire is very good: it is made up in half-pound packs or prints, packed up in square baskets, and sent to the London market by waggon. The butter of the mountains of Wales and Scotland, and the moors, commons, and heaths of England, is of excellent quality, when it is properly managed; and, though not equal in quantity, it is confessedly superior to that produced by the richest meadows. — (*Loudon's Ency. of Agriculture.*)

Considerable quantities are made in Ireland, and it forms a prominent article in the exports of that country: generally it is a good deal inferior to that of Britain; but this is a consequence rather of the want of attention and cleanliness than of any inferiority in the milk. Some of the best Irish butter brought to London, after being washed and repacked, is sold as Dorset and Cambridge butter.

The production and consumption of butter in Great Britain is very great. The consumption in the metropolis may, it is believed, be averaged at about 6 ounces per week for each individual, being at the rate of 19½ or (in round numbers) 20 lbs. a year; and, supposing the population to amount to 1,450,000, the total annual consumption would, on this hypothesis, be 29,000,000 lbs., or 12,946 tons; but to this may be added 3,000 tons for the butter required for victualling ships, and other purposes; making the total consumption, in round numbers, 16,000 tons, or 35,840,000 lbs., which, at 10*d.* per pound, would be worth 1,410,000*l.*

The produce per cow of the butter dairies was estimated by Marshall at 168 lbs. a year; but, owing to the great improvements that have been made both in breeding and feeding in the interim, the yield per cow may now be safely estimated at 180 lbs.; so that, supposing we are nearly right in these estimates, about 200,000 cows will be required to produce an adequate supply of butter for the London market.

Cheese.—England is particularly celebrated for the abundance and excellence of its cheese. Cheshire and Gloucester are, in this respect, two of its most famous counties. It is calculated that, in the former, 92,000 cows are kept for dairy purposes; and that they yield, at an average, 2½ cwt. of. cheese; making the total annual produce of the county 11,500 tons.—(*Holland's Survey of Cheshire*, p. 252.) We, however, have been assured that this estimate is too low; and that the average yield per cow is above 3 cwt.; making the total produce more than 13,800 tons. At 6*d.* per lb., this quantity would be worth 772,800*l.* There are two kinds of Gloucester cheese—double and single: the first is made of the milk and cream, and the latter of the milk deprived of half the cream. The cheeses are of various sizes, from 20 to 70, and even 80, pounds; running generally from 50 to 60 lbs. A great deal of cheese is also made in that part of Salop which borders upon Cheshire, and in North Wilts. The former goes under the name of Cheshire cheese: the latter was, till lately, called Gloucester cheese; now it receives its appellation from the county where it is made. A strong cheese, somewhat resembling Parmesan, is made at Chedder in Somerset. The richest and best of all the English cheeses, Stilton, is principally made in Leicestershire, in the country round Melton Mowbray. It is not reckoned sufficiently mellow for cutting until 2 years old; and is not saleable unless decayed, blue, and moist. It is said that, including all sorts, more than 1,500 tons of cheese are annually made in Leicestershire; and that 5,000 tons are annually sent down the Trent from this and the neighbouring counties.—(See *antè*, p. 173.) A rich cheese is made at Leigh in Lancashire. The other cheeses made in England which have acquired a peculiar name, either from the quantity made or from the quality, are the Derbyshire, Cottenham, and Southam cheeses. The last two are new milk cheeses, of a peculiarly fine flavour: the places where they are made are in Cambridgeshire. The cream cheeses of Bath and York have been much commended. Warwickshire and Banbury in Oxfordshire are also remarkable for cheese; the former for the quantity made, very large supplies being sent from it to London and Birmingham. Banbury cheese is distinguished for its richness.

Scotland is not particularly celebrated for its cheese: the best is called Dunlop, from a parish of that name in the district of Cunningham, in Ayrshire, where it was originally manufactured.—(See *antè*, p. 278.) Dunlop cheeses generally weigh from 20 to 60 lbs. each; and are, in most respects, similar to those of Derbyshire, except that they are larger. Dunlop cheeses are now made in many other districts; and the dairy system has extended considerably in the south-west of Scotlond.

According to Mr. Marshall, the average yearly produce of cheese from the milk of a cow in England is from 3 to 4 cwt., or more than double the weight of the butter.

Sheep.

Of the domestic animals belonging to Great Britain, sheep are, with the exception, perhaps, of horses and cattle, by far the most important. They can be reared in situations and upon soils where other animals would not live. They afford a large supply of food, and one of the principal materials of clothing. Wool has long been a staple commodity of this country, and its manufacture employs an immense number of people. "The skin, dressed, forms different parts of our apparel; and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones, calcined (like other bones in general), form materials for tests for the refiner. The milk is thicker than that of cows, and, consequently, yields a greater quantity of butter and cheese; and, in some places, is so rich that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. To conclude: whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds. *Post majores quadrupedes ovilli pecoris secunda ratio est; quæ prima sit si ad utilitatis magnitudinem referas. Nam id præcipue contra frigoris violentiam protegit, corporibusque nostris liberaliora præbet velamina; et etiam elegantium mensas jucundis et numeroris dapibus exornat.*" — (*De Re Rustica*, lib. vii. cap. 2.) And, in addition to what Mr. Pennant has here so forcibly stated, sheep are particularly deserving the attention of the agriculturist, both from the influence of improvements on the breed, and from their generally affording larger profits than can be obtained from the rearing and feeding of cattle.

Breeds. — In Great Britain sheep are commonly divided into two great classes — those which produce *long* or *combing* wool, and those which produce *short* wool. They may also be distinguished by the presence and absence of horns, and by other criteria.

Long-woolled Breeds. — The principal varieties of this species are the *Teeswater*, the *Lincoln*, the *Dishley* or *New Leicesters*, and the *Romney Marsh* breeds. These have no horns. The mutton of the first two and of the last is, comparatively, coarse-grained and large, weighing from 25 to 30 lbs., or upwards, a quarter: the wool is from 8 to 18 inches long: they are fattened only on the very richest land, such as the banks of the Tees, the fens of Lincolnshire, Romney Marsh, &c. The Dishley breed owes its celebrity and its name to the exertions for its improvement made by the famous breeder, Mr. Robert Bakewell. The length of the wool varies from 6 to 14 inches; the weight of the quarter of 2 year-old wethers varies from 20 to 30 lbs. This breed is peculiar, not only for its mutton being fat, but for the fineness of its grain and superior flavour; qualities in which it excels all other long-woolled sheep.

Short-woolled Breeds. — Of these there are an immense variety. Those most extensively reared in Great Britain are the *South Downs*, the *Cheviots*, the *black-faced* or heath breed, and the *dun-faced* or mountain breed. But there are a variety of other breeds, which are objects of great attention in different parts of the country, such as the *Dorset*, the *Hereford*, the *Wiltshire*, the *Norfolk*, &c. The fleece of the South Downs is short and fine, weighing from 2½ to 3 lbs.; mutton fine in grain, and of an excellent flavour; weight of 2 year old wethers about 18 lbs. a quarter. The South Downs were first cultivated with success in that part of Sussex whence they derive their name; but they are now widely diffused over all the dry chalky soils in the south. The wool of the pure Hereford breed is in the highest esteem. The Wiltshire variety is the heaviest of the short-woolled English breeds. The fleece of the Cheviots is of a medium degree of length and fineness, and weighs about 3 lbs.; mutton good; weigh from 12 to 18 lbs. a quarter. Within the last 30 years the Cheviots have been largely introduced into the Highlands of Scotland, where, though not so hardy as the black or dun-faced breeds, they are found to answer extremely well, and have been a most valuable improvement. They have now nearly superseded the black-faced breed in some of the principal pastoral districts in the south of Scotland. Black-faced sheep are smaller than any of those previously mentioned; their weight varies from 10 to 16 lbs. a quarter; and they carry from 3 to 4 lbs. of long, coarse, shaggy wool. They are seldom fed till they be 3, 4, or 5 years old, when they fatten well, and furnish the best and highest flavoured mutton. They are hardy; are widely diffused throughout the mountainous districts of England and Scotland; and, were their fleece better, would be the best of our upland breeds. The dun-faced breed, said to have been imported into Scotland from Denmark or Norway, at a very early period, still exists in most of the counties north of the Frith of Forth, though only in very small flocks. Of this ancient race there are now several varieties, produced by peculiarities of situation and different modes of management, and by occasional intermixture with other breeds. The sheep of the Shetland Isles and of the Hebrides belong to this variety: the last is the smallest animal of its kind, weighing only from 4 to 5 lbs. a quarter.

The *Merino* or Spanish breed of sheep was introduced into this country towards the close of last century. Its fleece, which consists of remarkably fine white short wool, weighs from about 2½ to about 3¾ lbs.: the quarter of a 2 year-old wether weighs from 14 to 16 lbs. George III. was an especial patron of this breed, which was for several years a very great favourite. But it has been ascertained that, though the fleece does not much degenerate here, the carcass, which is naturally ill formed, and affords, comparatively, little weight of mutton, does not improve; and as the farmer, in the kind of sheep which he keeps, must look to the butcher-market as well as to that for wool, he has found it for his interest to return to the native breeds of his own conntry, and to give up the Spanish. The latter have, however, been of considerable service to the flocks of England, having been judiciously crossed with the South Down, Hereford, &c.

When sheep are kept on mountainous districts, as in Wales or the Highlands of Scotland, the chief object in view is to breed them: when they are kept on grazing grounds, or on arable pastures, the principal object is to prepare them for the butcher. In some parts of England they are kept on tillage farms, not only that they may be fattened, but that they may manure the fallows by being folded upon them during their hours of rest. This practice has, however, been reprobated by Arthur Young and Bakewell, and generally by the best farmers. Mr. Loudon says, that the only sort of folding ever adopted by the best breeders is on turnips, clover, tares, and other rich food, where the sheep feed at their ease, and manure the land at the same time.

The practice of folding on fallows has been very little followed in Scotland.

The following table exhibits a compendious view of the more prominent characteristics of the principal breeds of sheep in Great Britain: —

Names of Breeds.	Head.	Colour of face and legs.	Wool.	Weight of fleece.	Wethers per quarter.	Age killed.
				lbs.	lbs.	Years.
1. Teeswater - -	No horns	White face and legs	Long wool	9	28	2
2. Lincoln - -	No horns	White face and legs	Long wool	10	25	2
3. Dishley, or New Leicester - -	No horns	White face and legs	Long wool (fine)	8	22	2
4. Cotswold - -	No horns	White face and legs	Long wool (fine)	9	24	2
5. Romney Marsh - -	No horns	White face and legs	Long wool (fine)	8	22	2
6. Dartmoor or Bampton - - -	No horns	White face and legs	Long wool (fine)	9	25	2
7. Exmoor - -	Horned	White face and legs	Long wool (coarse)	6	16	2½
8. Black-faced, or heath	Horned	Black face and legs	Long wool (coarse)	3	15	3½
9. Hereford, Ryeland -	No horns	White face and legs	Short wool (fine)	2½	14	3½
10. Morf, Shropshire -	Horned	Black and speckled	Short wool (fine)	1½	12	3½
11. Dorset - -	Horned	White and speckled	Short wool (fine)	3½	18	2
12. Wilts - - - -	Horned	White and speckled	Short mid.	3	20	3
13. Berks - - -	No horns	Black and white	Long wool	7	18	2½
14. South Down - -	No horns	Speckled and white	Short wool	2½	18	2
15. Norfolk - -	Horned	Black and white	Short wool	2	18	3½
16. Hardwick - -	Horned	Speckled and white	Short wool	2	10	4½
17. Cheviot - - -	No horns	White face and legs	Short wool	3	16	4½
18. Dun-faced - -	No horns	Dun face and legs	Short wool	1½	7	4½
19. Shetland - - -	No horns	Various coloured do.	Fine cottony	1¼	8	4½
20. Spanish - - -	Ram's-horned	White	Short wool (super.)	3½	14	2½
21. Ditto cross -			Ditto (fine)	2¼	16	2

Number of Sheep in Great Britain and Ireland. — It is not possible to form any accurate estimate, either of the number of sheep or of the quantity of wool annually produced. With the exception of Mr. Luccock's, most of the statements put forth, with respect to both these points, seem very much exaggerated. But Mr. L.'s estimate, which is considerably under any that had previously appeared, was drawn up with great care, and is supposed to approach nearer to accuracy.

According to Mr. Luccock, the

Number of long-woolled sheep in England and Wales, in 1800, was - . . - - -	4,153,308	
Of short-woolled, ditto - - - - -	14,854,299	
Total number shorn - - -		19,007,607
Slaughter of short-woolled sheep per annum - -	4,221,748	
Carrion of ditto - - - - - -	211,087	
Slaughter of long-woolled ditto - - -	1,180,413	
Carrion of ditto - - - - - -	59,020	
Slaughter of lambs - - - - -	1,400,560	
Carrion of ditto - - - - - - -	70,028	
		7,140,856
Total number of sheep and lambs -		26,148,463

In some parts of England there has been an increase in the numbers of sheep since 1800; but in others there has been a decrease. But we have been assured by competent judges that, on the whole, the number has not sensibly varied in the interval.

In the *General Report of Scotland* (vol. iii. *Appendix*, p. 6.) the number of sheep is estimated at 2,850,000; and, allowing for the increase that has taken place since 1814, they may now be estimated at about 3,500,000. Hence the total number of sheep in Great Britain will be 39,648,000. It is not supposed that there are 2,000,000 of sheep in Ireland.

Quantity of Wool produced annually in England.—According to the estimate in Mr. Luccock's Treatise on English Wool, the produce of all sorts of wool in England, in 1800, was 384,000 packs, of 240 lbs. a pack. But Mr. Hubbard, a very intelligent and extensive wool-stapler at Leeds, has shown that, supposing Mr. Luccock's estimate of the number of sheep to be correct, the quantity of wool now produced cannot, owing to the greater weight of the fleece, be estimated at less than 463,169 packs; being an increase of 20 per cent. It is, therefore, clear, seeing the high price to which wool has recently attained, that, taking into account the greater weight of the fleece, as well as of the carcass, sheep must produce more at present to the farmer than at any former period. Taking Scotland and Ireland into account, the total annual produce of wool in the British empire may be estimated at about 520,000 packs.*

Deterioration of British Wool.—It appears to be sufficiently established, by the evidence taken before the House of Lords, in 1828, and other authorities, that a considerable deterioration has taken place in the quality of British wool, particularly during the last 30 years. The great object of the agriculturist has been to increase the weight of the carcass and the quantity of the wool; and it seems very difficult, if not quite impossible, to accomplish this without injuring the fineness of the fleece. Mr. Culley says that the Herefordshire sheep, that produce the finest wool, are kept lean, and yield 1½ lb. each: he adds, "if they be better kept, they grow large, and produce more wool, but of an inferior quality." This would seem to be universally true. The great extension of the turnip husbandry, and the general introduction of a larger breed of sheep, appear, in every instance, to have lessened the value of the fleece. Speaking of the Norfolk fleeces, Mr. Fison, a wool-sorter, says, that 25 years ago the weight was 2½ lbs. per fleece, and that now it is 3 or 3½ lbs.—(*Report*, p. 356.) But, according to a table furnished by the same gentleman, containing the results of his experience, it appears that, of 15 tods or 420 lbs. of clothing wool, grown in Norfolk in 1790, 200 lbs. were prime; while, in 1828, the same quantity of Norfolk wool only yielded 14 lbs. prime.—(*Report*, p. 207.) The statements of other witnesses are to the same effect.—(*Report*, pp. 383. 640. and 644.)

Exportation of Wool.—From 1660 down to 1825 the exportation of British wool was prohibited under very severe penalties. The motives for this were of a mixed nature. It was supposed that it would materially promote what used to be the principal manufacture of the country, by insuring an abundant and cheap supply of the raw material: and it was farther supposed, that no long wool, or wool fit for being made into worsteds, was produced in any other country; so that, if we prevented its exportation, foreigners would be obliged to resort to us for the finished articles. None of these suppositions seems to have been very well founded. The prohibition of the exportation of short wool, by lessening the demand for it, must have lessened its growth; and, if it really was advantageous to the manufacturers, by furnishing them with a cheaper article, it must have been in an equal degree injurious to the farmers. Neither is there any evidence to show that the foreigner ever felt any material inconvenience from the prohibition of British long wools, which, indeed, were smuggled abroad in considerable quantities, in spite of all that could be done to prevent it; and, though such inconvenience had formerly been felt, the improvements made within the last thirty years in machinery, by enabling wool of only 3 inches in the staple to be substituted, in the manufacture of worsteds, for long wool of 6 or 8 inches staple, put an end to every argument by which its prohibition could be excused. At length, in 1825· this unjust and oppressive restriction was abolished; and British wool of all sorts may now be freely exported on payment of the trifling duty of 1*s.* a cwt. Foreign wool has been at all times admissible into our ports, sometimes free, and sometimes on paying a duty.

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* See article Wool in *Commercial Dictionary*. The number of sheep and of packs of wool, in our notices of the different English counties, are taken from Mr. Hubbard's tables.

Mules and Asses, especially the former, are not very abundant in England; and are scarcely, if at all, used in husbandry. Asses are employed in drawing small carts, and in carrying burdens, by poor people, particularly those who live near commons, the barrenest of which will keep an ass.

Hogs, in an agricultural point of view, are of considerable importance. They afford a valuable and desirable species of food, at the same time that they subsist principally upon offal and other refuse, that, but for them, would be utterly lost. There is an immense variety of breeds; but the best are those which are short-legged, broad in the back, small-boned, compact, and easily fattened: their ears are sometimes pendulous, and sometimes erect. The Berkshire, Hampshire, Gloucester, and Hereford breeds are all of a large size; but the Rudgwick breed attains to, perhaps, the greatest weight of any. The Berkshire variety is hardy and valuable, and is found in most parts of the island, being the breed commonly fattened in distilleries. The Suffolk is small, and erect-eared: it feeds well, and is in great esteem.

Westmoreland and Yorkshire are distinguished for the quantity and quality of their hams, the goodness of which depends partly on the animal, but quite as much on the mode of cure. The best bacon is made in Wilts, Hampshire, and Berks. It is stated, by Dr. Mavor (*Survey of Berks*, p. 452.), that at Farringdon, in the last-named county, fully 4,000 hogs are annually killed and cured. The exportation of bacon and hams is but inconsiderable.

There is much difference of opinion as to the profit to be derived from raising pigs. In most instances, they are viewed by farmers merely as a subordinate concern. Mr. Wakefield says, "I never knew them to be profitable, when kept in any number beyond that which could subsist by picking up the waste grain and acorns; for, the moment they were put upon a course of feeding, money was lost by them." — (*Account of Ireland*, vol. i. p. 354.) But with millers, brewers, distillers, and dairymen, the case is certainly otherwise: they are to them objects of great importance; and return, for the offal they consume, a greater weight of meat, some say double, than could be obtained from cattle.

We extract from Mr. Vancouver's *Survey of Essex* the following judicious observations with respect to the management of hogs: — "There is no animal in the whole economy of good husbandry that requires more attention as to breed, number, and supply of food, or will better requite the care and trouble of the farmer, than a well managed and proper stock of hogs. These things, however, are too much overlooked, or, rather, disregarded, by farmers in general; though all are ready to agree that an over-stock in other respects must ever prove fatal to the interests of the farmer. Hogs are too frequently conceived to be a trifling and unimportant part of the stock of a farm; whereas, if their first cost and the value of their food were duly considered, with their improving value, it would certainly bear them out against some of the more costly animals, and challenge more attention and care than are usually bestowed upon them. A due regard to the breed, which the peculiar circumstances of the farm may call for, is particularly necessary; as some breeds are much better suited to pasture and feed upon grass and herbs only than others. The most hardy, and best qualified to prog for themselves, are the Chinese; a cross with which breed upon almost any other may, under most circumstances, be prudently recommended. Let the breed be what it may, a well-proportioned stock to every farm will most abundantly requite the care, and repay the expense, of the necessary food provided for them. A few acres of clover would be well applied to the use of the hogs in summer; but, in the stye, it would be well to restrain them to a certain quantity of water, and to lodge them clean and dry, notwithstanding the wilful neglect and too prevailing opinion to the contrary; for cleanliness is as essential to the preservation of their health and well-doing as to that of any other animal."

Scotch Hogs.—The best varieties of the English breed have been introduced into Scotland; but the native breeds, which are still in many places the most numerous, are very unprofitable animals. They are of a white colour, have light narrow carcasses, with bristles standing up from nose to tail, long legs, and are very slow feeders, even at an advanced age. In the Highlands and Hebrides, the breed supposed by Dr. Walker to be the aboriginal is of "the smallest size, neither white nor yellow, but of a uniform grey colour, and shaggy, with long hair and bristles. They graze on the hills like sheep: their sole food is herbage and roots; and on these they live the whole year round, without shelter, and without receiving any other sustenance. In autumn, when they are in the best order, their meat is excellent, and without any artificial feeding; but, when driven to the low country, they fatten readily, and rise to a considerable bulk."—(*Walker's Hebrides*, vol. ii. p. 17.)

Of the Scotch counties, Dumfries and Galloway are pre-eminent for the excellence of their hams and bacon, which rival those of York and Wilts. Dumfries is one of the greatest pork markets in the empire.

Goats are reared in the mountainous parts of England, Wales, and Scotland. Those bred in the former are the largest, and their skins the most valuable. The Cashmere-shawl goat has been successfully bred in Essex; but, owing to the moisture of our climate as compared with its native country, its wool must degenerate.

Deer are kept only in the parks of opulent noblemen and gentlemen as an article of luxury. In a national point of view they are of no importance.

Rabbits are, for the most part, kept on sandy waste soils, unfit for other purposes. Their haunts are called warrens, and are most numerous in Norfolk and Cambridge. They sometimes extend to 2,000 and 3,000 acres. The annual produce is estimated at from 3 and 4 to 8 and 10 couple an acre, yielding a profit of from 5*s.* to 10*s.*, and sometimes even as much as 15*s.*, an acre. On the whole, however, the growth of rabbits seems to be wasteful and pernicious, unless when they can be confined to a sandy soil, applicable to no other purpose.

Poultry are objects of very considerable importance, directly and indirectly, on account of their eggs and feathers. Turkeys, geese, and ducks are reared in all parts of the country in considerable quantities; but common fowls are by far the most numerous and valuable. The Dorking cock and hen, so called from the town in Surrey of that name, are the largest and most valuable of the common fowls; and are readily distinguished from other varieties by having 5 toes to each foot. North Chappel and Kensford, in Sussex, are famous for their poultry. Perhaps, however, Oakingham, in Berks, is, in this respect, the most celebrated. The fowls are sold, fattened, to the London dealers, and as much as 150*l.* has been paid for them in a single market day.—(*Mavor's Berks*, p. 462.) The trade in eggs between the country and the towns is of very considerable importance. Exclusive of immense importations of foreign eggs, London draws large supplies from the adjoining counties. The value of the eggs exported from Berwick only to the London market, previously to the peace of 1815, has been said to amount to 30,000*l.* a year; though this is probably an exaggeration.—(*Penny Cyclopædia*, art. BERWICK.) But this export has almost entirely ceased; French eggs being (notwithstanding the duty of 1*d.* per dozen) cheaper than those usually brought from the more distant countries. In 1796 it was calculated that the peasantry of Mid-Lothian drew about 8,000*l.* a year for poultry and eggs; though, speaking generally, Scotch poultry of all descriptions are very inferior to English. There are different breeds of ducks kept in Britain; but the most common are the white or English breed, and the brown or speckled. Perhaps as many of these birds are kept in Bucks as in any other county: they are of an early sort, and are bred by poor people for the London market. Ducks, from their feeding chiefly on pernicious insects and refuse, and being very harmless, are, probably, the most profitable species of poultry that can be kept by common farmers. Geese are bred in all parts of the country; but, on a great scale, principally in the fens of Lincolnshire, where, previously to the drainage of the fens, there were frequently as many as 1,000 breeders in a single flock; but their numbers are now much reduced. They are plucked once a year for their quills, and four or five times for their feathers. — (*Antè*, p. 186.) The best geese are found on the borders of Suffolk and Norfolk, and in Berks. Somerset furnishes the best goose-feathers for beds. Turkeys, though a tender bird, are reared in all parts of the country, but especially in Norfolk and Suffolk. (See *antè*, p. 191.) They are, also, which seems singular, common in Ireland. This, as Mr. Wakefield remarks, appears to be owing to the warmth of the cabins, into which fowls, as well as pigs, are always freely admitted.

Pigeons. — There are great numbers of these birds in England. A dovecot is reckoned an indispensable adjunct to a country-gentleman's residence; and in many counties it is customary for farmers to keep a few pairs. They are occasionally reared in the view of supplying the market, but, for the most part, they are kept as articles of luxury. They are very voracious, and destroy great quantities of grain. There are some rather curious calculations on this subject in Vancouver's Survey of Devon. He supposes that there are, in all, 20,000 pigeon-houses, and 1,125,000 pairs of dove house-pigeons, in England and Wales; and that they consume 157,500,000 pints, or 4,921,875 Winchester bushels, of grain a year! Of course there must be a good deal of looseness in this statement: it has been said by some to be much under, and by others to be much over, the mark. But, without giving any opinion on this point, there can, at all events, be no question that the number of pigeons is very great, and that the destruction they carry on, when considered in the aggregate, must be very considerable indeed. — (*Vancouver's Devon*, p. 357.)

Bees are the only insects domesticated in Great Britain. They furnish two valuable products — honey and wax. During the middle ages, and down, indeed, to the reign of Charles I., the imports of sugar were but inconsiderable; and honey was, in consequence, very extensively used as a sweet. But, since the foundation of the colonies in the West Indies, the importance of honey has very much declined. It is still, however, in considerable demand; while the consumption of wax is greater than at any former period. But both the produce and profit of bees are extremely uncertain. Inasmuch, however, as they are supported at almost no expense, require very little care and attention, and are most interesting animals, they make a desirable addition to the gardens of cottagers and farmers.

SECT. VII. *Agriculture of Ireland.*

A large proportion of the surface of Ireland is covered with bogs and mountains; but, notwithstanding this deduction, it contains a great deal of most excellent land. The luxuriance of the pastures, and the heavy crops of oats that are every where raised, even with the most wretched cultivation, attest its extraordinary fertility. This is the more singular, since, as has been already observed, the soil is generally thin. But this deficiency is balanced, partly by its principally resting on a calcareous subsoil, and partly by the moisture of the atmosphere. "I think," says Mr. Young, speaking of extensive tracts in Limerick and Tipperary, "it is the richest soil I ever saw, and such as is applicable to every purpose you can wish: it will fat the largest bullock, and, at the same time, do equally well for sheep, for tillage, for turnips, for wheat, for beans, and, in a word, for every crop and circumstance of profitable husbandry."—(*Tour in Ireland*, 4to ed. p. 313.) The appearance of the country is a most deceptive criterion of the quality of the soil. The fences are, for the most part, mere mounds of earth, full of gaps; there is little timber; and the land is often overgrown with thistles, ragwort, and other noxious weeds. "You must examine," says the intelligent observer just quoted, "into the soil, before you can believe that a country which has so beggarly an appearance can be so rich and fertile."—(P. 315.) With a good system of agriculture, Ireland would certainly be about the most productive country in Europe; and would more than realise all that the old Roman writers have said of the fertility of Sicily. No one, indeed, who has ever been in Ireland, and contrasted the extraordinary richness of the soil with the poverty of the occupiers, their miserable implements, and modes of management, can doubt that, were security of property, and a proper system of holding and managing land, introduced, the produce of the country might be augmented to an extent not easily imagined — perhaps in a *quintuple* proportion!

Ireland is generally divided into larger estates than England; but the farms or occupancies are, notwithstanding, at an average, much smaller. This, however, has not been always the case. Previously to the close of the American war, though there were some very small occupancies in all parts of the country, but particularly in the north, farms seem, generally speaking, to have been pretty extensive. Since that period, however, they have rapidly diminished. "Farms," says Mr. Newenham, "appear to have been diminishing in Ireland for many years past. Large farms of from 500 to 1,500 and 2,000 acres, once so common in Ireland, hold actually no sort of proportion to farms of from 10 to 30 or 40 acres. In the county of Down, Mr. Dubordieu says that farms run from 20 to 40, 50, and, in some instances, so far as 100, acres. Such is the case in most other parts of Ireland. For several years past the landlords of that country have been much in the habit of letting their lands in small divisions.

"Another custom has become extremely prevalent—that of taking considerable tracts of mountain, bog, or other waste land, inclosing, improving them, and letting them in small farms of from 20 to 30 acres. Besides this, the cottier system, or giving a certain quantity of land as an equivalent for wages, prevails throughout most parts of Ireland. In fact, upwards of *four fifths* of the Irish people are subsisted chiefly on the produce of the land which they occupy."* We subjoin a table, drawn up by Lord Clements, from the evidence collected by the Commissioners of Poor Inquiry, embodied in the Appendix F. to their report.

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* Inquiry into the Progress of the Population of Ireland, p. 270.

Average Size of Tillage Farms in Ireland, compiled from the Observations on Agriculture, *Appendix* F. p. 357. &c.

County.	Barony or Hundred.	Average Size in Acres.	Observations.
		CONNAUGHT.	
Galway	Kilconnel		Grazing district; largest tillage farm 70 acres.
Leitrim	Dromahair	Few more than 4 in til.	Grazing district.
———	Mohill	Under 6 ...	Tillage district.
Mayo	Murrisk	Average 3 ...	Tillage district; largest tillage by one farmer 10 acres.
Sligo	Carberry	Average 3 ...	Tillage district.
		LEINSTER.	
Dublin	Balrothery	Most from 10 to 20	Two thirds tillage; farms various sizes.
Kilkenny	Galmoy	Average 20 to 30	Tillage district; largest 60 acres.
———	Gowran	Every size under 100, especially under 60 & 70	Mixed tillage and grass; largest tillage 120 acres.
King's Co.	Clonlisk	Average from 10 to 30	Principally tillage mixed with grazing; largest 121 acres.
———	Philipstown	Average from 10 to 20	Half tillage and half grass.
Louth	Dundalk	Most of 30 or 40, or probably less	Tillage farms; one half grass.
Meath	Up. & Lr. Kells	Average from 20 to 50	Two thirds pasture.
———	Moyfernagh	Usual size 30 to 50, of which ½ grass	Tillage and grass.
Queen's Co.	Maryborough	Average 20	Chiefly tillage.
———	Portnahinch	Average 20	Mixed tillage and grass; largest tillage 50 acres.
Wicklow	Talbotstown	Most from 30 to 40, of which one fifth tilled.	Dairy farms of all sizes.
		MUNSTER.	
Clare	Corcomroe	Most from 10 to 30	Arable district. I know a farmer who tills above 20 acres.
Kerry	Iveragh	Average stock 4 to 12 cows, many less	Mountainous grazing.
———	Trughenacmy	Average stock 6 to 10 cows, more and less	More pasture than tillage; largest tillage over 3 acres.
Limerick	Connello	Average til. from 20 to 30	More tillage than grazing; one farm has more than 100.
———	Coshlea	Do. under 20	Tillage and grass for dairy farms; not more than 30 to 50 acres tilled.
Tipperary	Middle third	Farms under 1 acre 280 Do. from 1 to 5 1,056 5 to 10 745 10 to 20 759 20 to 50 551 50 to 80 127 80 to 100 20 Do. above 70	Two thirds tillage. The assistant commissioners do not state the averge size of tillage farms. It is probable that the great majority of farms above 20 acres are occupied in grazing.
Waterford	Decies	Average 20 to 50	Equally pasture and tillage; largest tillage, 30 to 40.
———	Middle third	If a farmer holds 50 he ploughs from 10 to 20	Dairy district 40 to 60.
		ULSTER.	
Armagh	Fews	Average 8 to 10	Nearly all tillage.
Cavan	Loughtee	6 to 8	Two thirds tillage.
Down	Iveagh	Usual 3 to 10	Tillage district; one family holds above 50 in tillage.
———	Lecale	Average 16 to 20	Tillage district; largest 100.
Fermanagh	Tyrkennedy	10 to 20	Tillage farms, of which two thirds ploughed.
Monaghan	Monaghan	8 to 10	Altogether a tillage district.
Tyrone	Olnagh	12	Tillage; few more than 40 or 50 acres.

Every part of Mr. Wakefield's work on Ireland abounds in similar statements. That intelligent agriculturist, the late Mr. Curwen, visited Ireland in 1813; and has, in his *Letters*, many striking passages to the same effect. "In some places," he says, "there is an inhabitant for every acre, while the cultivation of the soil, as now practised, does not afford employment for a third part of that population."—(*Letters*, vol. ii. p. 38.) And he adds that, owing to there being none, or but very little, demand for the labour of any part of the country population in towns or manufactures, the practice of subdividing was still on the increase; and that few occupiers, however small their own possessions, refused to sub-let portions to cottiers. "A farmer," says Mr. Townsend, "often estimates his riches by the number of his sons, whose labour precludes any necessity of mercenary aid; but this lasts only for a short time. They marry at an early age; new families arise; a separation of interest takes place, and with it a partition of the farm." The same system still going on, future sub-divisions have to be made, more or less productive of jealousy and quarrel." —(*Survey of Cork*, vol. i. p. 208.) Such is the universal practice all over the country. "One great obstacle to improvement," says Mr. Ross, "and which is too general in Ireland, is their notion of the equal and unalienable right of all their children to the inheritance of their father's property, whether land or goods. This opinion, so just and reasonable in theory, but so ruinous and absurd in practice, is interwoven in such a manner in the very constitution of their minds that it is next to impossible to eradicate it. In spite of every argument, the smaller Irish occupiers continue to divide their farms among their children, and these divide on, till division is no longer practicable; and, in the course of two or three generations, the most thriving family must necessarily go to ruin." — (*Survey of Londonderry.*) The extent to which this ruinous practice is carried is such as sometimes almost to exceed belief. Dr. Kelly, late Catholic Archbishop of Tuam, stated, in his evidence before the Committee of 1830 on the "State of Ireland," that he knew a farm in his neighbourhood, which was originally leased, on the partnership system, to about 20 families; and he afterwards recollected to have seen 60 families living on the same farm—an augmentation that grew naturally out of the increase of population.

This splitting of the land into minute portions, and the direct dependence of so large a portion of the people on it for subsistence, form the principal obstacles to the improvement of agriculture; and make the condition and prospects of the population exceedingly unfavourable. We shall afterwards briefly inquire into the circumstances which have produced a state of things so widely different from what exists in Britain; but, at the present, it is sufficient to state, that the excess of the purely agricultural population, and the minute division of the land, give its peculiar and distinguishing features to the system of husbandry pursued in Ireland, and occasion almost all that is objectionable in it.

In general, it may be observed of Irish agriculture, that those who carry it on have very little capital, and are remarkably destitute of both skill and industry. The smallness of their farms, by rendering it impossible for many of their occupiers to keep horses, and the want of any efficient demand for labour, has led to the employment of the spade to an extent unknown in any other European country. Land being, in a vast majority of instances, held, not in the view of making a profit by it, but to obtain the means of subsistence, the rent is enormously high, and those crops are principally resorted to that furnish most food on the least space. Hence the extraordinary extension of the potato culture, which has diffused itself over every part of Ireland, and been at once a powerful cause and a striking consequence of the rapid increase of population. The common order of Irish occupiers have no correct idea of a rotation of crops. Corn usually follows corn, so long as the soil is capable of producing any thing; or, if the series be interrupted, it is only to make way for a crop of potatoes or flax: when the land is completely exhausted it is left to recover itself. The culture of rye-grass and clover is restricted within very narrow limits; and that of turnips is confined to farms occupied by the gentry and better class of occupiers. Fallowing is sometimes attempted; but it is, for the most part, so ill executed that it is difficult to believe it can be an improvement. Three ploughings are usually given to the land; but, from the imperfect manner in which they are executed, it is not unusual for the ground, at the end of the season, to be thickly covered with weeds. Except on the east coast of the island, the drill husbandry cannot be said to be yet introduced; for, so long as it is entirely neglected by the mass of the occupiers, the fact of its being carried on within the *demesnes* of a few noblemen and gentlemen can hardly be considered as an exception to the remark. To whatever cause it may be owing, a want of industry is but too apparent. Few Irish occupiers seem to imagine that their crops would be improved, or the exhaustion of the land counteracted, by clearing it of weeds. If any efforts be made to destroy them, it is only when they are found among potatoes. Docks, thistles, and other noxious plants flourish in corn-fields in unscathed luxuriance. Nay, such is the slovenliness of the mass of the occupiers, that even the potato, though their whole dependence be placed on it, is frequently injured, and sometimes wholly lost, by their allowing it to remain too long in the ground! — (*Wakefield*, vol. i. p. 583.) That a country of the extent of Ireland, and so encumbered with bogs and mountains, should be able, with such a system of agriculture, to support a population of 8,000,000, and also to export large supplies of raw produce, is a sufficient proof of the extraordinary fruitfulness of the soil, and of the economy forced on the inhabitants by the unhappy circumstances under which they are placed.

We have already given, in our notices of the different Irish counties, some account of the more prominent features of their agriculture. In the following statements we have distributed the country into departments, according to the plan laid down by Mr. Wakefield, in whose valuable work the reader will find a great variety of details on this as on most other subjects relating to the statistics of Ireland.

I. *Agricultural Implements and Operations.* — These, in Ireland, used to be of the rudest construction, and performed in the most awkward manner. The plough, the spade or *loy*, the flail, the car, are all clumsy and defective. The old Irish plough is almost identical with the old Scotch plough, still in common use in some parts of the Highlands. — (*Antè*, p. 309.) Like the latter, it does its work ill, and at an immense expense. It is commonly drawn by four or more horses, and sometimes by cattle and horses intermixed. Exclusive of the ploughman, it is invariably attended by one or two drivers; and by a man whose business is to sit on the beam, and to assist in keeping the instrument in the ground! Luckily, improved Scotch ploughs, drawn by two horses, managed by the ploughman, have been introduced, either to a greater or less extent, into most districts; though the old Irish plough is still in pretty general use in several counties.

The wheels of the car not unfrequently consist of large, rounded, solid pieces of timber, resembling grindstones; and sometimes it is what is called a *slide car*, and has no wheels at all. But wheels constructed with spokes, and carts, are gradually, and, in parts, rapidly displacing the old wheels and cars.

The *loy* is a long narrow spade, with room for only one foot to work on. Most kinds of hand tools have bad handles, and they are generally defective in their construction, or kept in bad order. The harness used to consist in a far greater degree of straw, than of either hemp or leather; but it also is materially improved.

But few *thrashing machines* are to be found in the whole kingdom. Nor need this be wondered at; for even barns, taking the term in its English and Continental sense, are quite unknown in many extensive districts! and, as already stated, thrashing is not unfrequently performed on the public roads, the hardness of which makes them serve the same purpose as a barn floor! Most operations are, in fact, performed in a way that excites the astonishment of those acquainted with the mode in which similar operations are performed in Britain. Trenching land is very general; it is formed into beds, a deep trench being dug between them, the earth of which is thrown up.

Drainage, the greatest of all improvements in agriculture, and which may, in truth, be said to lie at the bottom of every other, is all but unknown throughout the greater part of Ireland. It is too expensive to be executed by the great bulk of Irish tenants; and there are but few landlords who have hitherto done anything to benefit their estates by attempting this improvement. Fortunately a large portion of Ireland rests on a limestone bottom, which renders drainage of less importance; but wherever this is not the case, the wetness of the land is universally complained of. The only substitute for drains to be found in many extensive districts, consists of the trenches between the beds of potatoes planted on the "lazy bed" system; and it is said that in some parts this system is continued from its being the only means, defective as it is, of removing the water from the land, and preventing the potatoes from being rotted. Of course none of those extraordinary ameliorations effected during the last few years in many parts of Scotland and England by furrow draining, have been so much as heard of in Ireland; so that in this respect, as in most others, it offers an all but boundless field for the successful prosecution of improvements.

II. *Farm-houses, Offices, &c.* — Every thing in Ireland seems to have been at all times sacrificed to the *auri sacra fames* — taking the phrase in its most literal and degrading sense — to a desire to make the greatest amount of money in the least space of time, without caring much about the means. In travelling through the country, one cannot help thinking, that not merely the tenants, but also the landlords, have been uniformly impressed with the conviction that they had no permanent interest in the soil. It is in vain to look in it for those expensive and lasting improvements, those outlays of capital, of which posterity is to derive the principal benefit, that are everywhere to be met with in England and Scotland, and which add so prodigiously to the value and the beauty of the land, and the comfort of its occupiers. Excepting only that the roads are generally good, one might suppose nine tenths of the country not only to be occupied by, but to belong to, a race of people too poor to make any outlay, however indispensable. The reason is, the tenant has been oppressed, and has been, at the same time, left to do every thing for himself. If he do not construct or repair houses, offices, fences, drains, &c., he must want them, or they may go to ruin. "*Nothing is ever built or repaired by landlords; these expenses, as well as those of every other improvement, are left to the tenant,* who generally comes into a dilapidated holding, without capital enough to stock it, still less to build, to fence, or to drain." — (*Survey of Kilkenny*, p. 412.) Hitherto the landlords of Ireland, speaking of them in the mass, — for there are some exceptions, — seem to have fixed their exclusive attention on their rentals; supposing that their duty to their tenants, to the public, and even to the lasting interests of their estates and families, was fully discharged when they had racked their rents to the utmost! There are circumstances, that will afterwards be glanced at, connected with the history and peculiar situation of Ireland, which satisfactorily explain this apparently anomalous conduct. But it is not easy to exaggerate its mischievous influence. It has led to a total separation of interests between landlords and tenants; making the former be looked upon rather as the unfeeling collectors of an exorbitant land-tax, than as persons having a deep interest in the improvement of the soil, and in the prosperity of its occupiers. Proofs of what has now been stated are too numerous and striking not to arrest the attention of even the most superficial observer. The recent history of Ireland shows conclusively that the landlords have little influence over, and possess neither the respect nor esteem of, their tenants; while the culpable indifference of the former to every thing that most materially affected the condition of their estates, is evinced by their not attempting to oppose any effectual obstacle to the endless subdivision of the land, till the evil had attained to a ruinous magnitude; by the want of all systematic efforts to introduce and enforce a proper system of agricultural management; and by their throwing on the tenants the burden of supplying themselves with houses and all other accommodations.

"With the exception," says Mr. Wakefield, "of those belonging to the gentry, *there is nothing in Ireland worthy of the name of a farm-house,*" — (Vol. i. p. 468.) In external appearance the houses of the middle class would, with a few exceptions, principally in the neighbourhood of Belfast and other large towns, hardly rank with the worst English cottages; while in all that respects cleanliness and internal comfort they are immeasurably inferior. The people have been so long accustomed to the vilest habitations, that when they get any thing better they look upon it in the light of an incumbrance. Mr. Tighe observes of Kilkenny, a county of which there are more extensive tillage farms than in most others, that "A decent house, let to a common farmer, becomes, in a year, little better than a pigstye. The houses of rich farmers are generally far inferior to their means, and are such as to exempt them from window-tax, and often from hearth-money. But the greatest failing is in their offices: the barn is generally a shed to thrash in, with no floor but the natural soil; the stable a hovel; a cow-house is often not to be found; no yard is appropriated to pigs; the corn stands alone to mark the farm; a shed to protect the implements of tillage was never thought of; the richest farmers always leave the plough and harrow in the corner of the last field they tilled; such parts of harness as may not consist of gads or sugans is secured in the house; and, with the smaller farmers, if the car does not stop some gap, called a gateway, it may be against the ditch, or on the dunghill. The offices are sometimes covered with potato stalks, which form a very bad thatch." — (*Survey of Kilkenny*, p. 412.)

This, though written several years since, continues to be a pretty faithful description of the generality of Irish farm buildings, even in a county where they are believed to be above the average!

We have already repeatedly noticed (*see ante*, p. 375, &c.) the habitations of the small farmers and cottiers. They do not, in the great majority of instances, deserve the name of houses; but are miserable cabins, inferior even to the wigwams of the American Indians. Part of the turf employed in building the walls is almost always taken out of the inside, so that the floor of the cabin is generally about a foot below the level of the ground on the outside: their floors are consequently always damp. They not unfrequently want chimneys; and are almost always pervious to the rain. The instances are rare in which their occupiers possess any thing that an Englishman would call furniture.

It may be worth while to observe, that Spenser saw, and clearly pointed out, the great injury the landlords of Ireland did themselves and the country by withholding leases from their tenants, and refusing to assist them in building houses on their farms, and in making fences, roads, &c. "By such buildings and inclosures," says he, "the tenant shall receive many benefits. First, by the handsomeness of his house, he shall take more comfort of his life, more safe dwelling, and a delight to keep his said house neat and clean; which now being, as they commonly are, rather swine-styes than houses, is the chiefest cause of his so beastly manner of life and savage condition; lying and living together with his beasts in one house, in one room, in one bed; that is, clean straw, or, rather, a foul dunghill. And to all those other commodities he shall, in short time, find a greater added; that is, his own wealth and riches increased, and wonderfully enlarged, by keeping his cattle in inclosures, where they shall always have fresh pastures, that now is all trampled and overrun; warm covert that now lieth open to all weather; safe being, that now are continually filched and stolen." — (See *View of the State of Ireland*, p. 1588. of *Spenser's Works*, London, 1715.)

Could the task of revising his book, written in the reign of Elizabeth, have been performed by Spenser in that of Victoria I., this is not one of the paragraphs that would have required any material alteration. The habitations of the mass of the Irish people are quite as bad, at this moment, as they were three centuries ago; and are now, as then, crowded with cows and pigs as well as men!

> ———————— "Ignemque, laremque,
> "Et pecus, et dominos communi clauderet umbra."
>
> *Juvenal*, lib. ii. sat. 6.

It is unnecessary, perhaps, to inculcate on the reader the propriety of bearing in mind that the preceding remarks on the agriculture, &c. of Ireland refer only to its general state, and that there are very great local discrepancies. Particular estates, even in the worst counties, may be pointed out that are comparatively well farmed; while others, though situated in the best districts, seem to be occupied by none but beggars. When estates are let on leases, terminable in reasonable periods, their condition depends materially on the conduct of the landlord. If he set his face strongly against subdivision; employ honest agents; abjure the practice, so general in Ireland, and so disgraceful to the landlords, of accepting, or rather extorting presents from the tenants on the renewal of leases, &c.; give proper encouragement to industrious tenants; and look to character and capital, as well as rent, in the letting of his land, he may do a vast deal of good. Earl Fitzwilliam's estate, in Wicklow, is, in most particulars, an instance of this. In respect of soil and climate, it has no advantage over those in its vicinity, it being, in great part, in fact, mountain land; but the liberal and intelligent system pursued in its management has made the farms extensive, the tenants industrious and opulent, and their condition such as, Mr. Wakefield says, would do honour to any part of Europe.—(Vol. i. p. 283.) Even in it, however, though it would seem not to have been noticed by Mr. Wakefield, there has been a good deal of subletting; but the practice has been put a stop to, and its pernicious influence will be effectually counteracted by the judicious measures that have been adopted in that view.

III. *Agricultural Departments.*—Mr. Wakefield divided Ireland into nine agricultural districts, each of them differing, in some respects, in the mode of culture from the others.

1st. The first district embraces the flat parts of Antrim, the eastern side of Tyrone, with Down, Armagh, Monaghan, and Cavan. Throughout this district the farms are, for the most part, extremely small, and the land is often dug with a spade. About *three fifths* are under tillage. Oats and potatoes are the principal crops; but wheat and flax, particularly the former, are now extensively raised. A proper rotation is too little attended to; and corn crops frequently follow in succession, or with the intervention merely of potatoes and flax, till the land is exhausted; when it is suffered to "lie at rest," till it recovers its strength, which it does in an incredibly short space. Sir Charles Coote says, that in Cavan oats used to be to other grain in the proportion of *seventy* to *one;* but this proportion is, at present, materially reduced. Agriculture in this part of the district is still, however, in "the most degraded state possible."—(*Appendix* F, *Poor*

Inquiry, p. 418.) It is also very backward in Monaghan, where the ruinous practice of procuring manure for the potatoe crops by burning the land is carried on to a great extent.—(*Appendix* F, *Poor Inquiry*, p. 421.) But in other parts, particularly in Armagh and Down, various important improvements have been effected. In the former, the system introduced by Mr. Blacker on the Gosford and other estates, of raising manure on small farms by cultivating green crops and stall feeding, has had a most material influence. But, as previously stated, (*anté*, p. 385.), its beneficial effect seems to be a good deal overrated. It is impossible that farms of the size of from 3 to 10 imperial acres, which is about the average size of those on the barony of Lower Fews, on which Mr. Blacker's system is principally introduced, can, after paying rent, afford anything but the most miserable subsistence to their occupiers. No doubt it is a vast improvement on the old burning and scourging system; but nothing short of the consolidation of these small patches into farms of from 50 to 100 acres, can ever allow of the accumulation of capital by the tenants, or of the establishment of a really good system of agricultural management. Improved Scotch ploughs, constructed wholly of iron, are now very generally met with in the improved districts, as are improved single horse carts. On most considerable farms in Down, Armagh, and Antrim potatoes are drilled and horse-hoed. But in most parts of Cavan, Tyrone, and Monaghan the implements are still of the most wretched description. In some parts, three or four neighbours unite to set a plough in motion; one bringing his horse, another his bullock, another his cow, &c.; and attending himself, lest his poor animal should be made to perform more than its "just share" of the labour. The other operations of agriculture are, in most instances, performed in an equally objectionable manner. The land is seldom fallowed; and when any thing of the kind is attempted, it is very ill performed. Wheat is sometimes "lashed;" that is, the grain is knocked out by striking the sheaf across a beam placed above a cloth; the sheaf being afterwards subjected to the flail. Thrashing is not unfrequently performed in the highway; and cottiers dress their grain by letting it fall from a kind of sieve, held, during a pretty strong wind, breast high, by a woman. Corn is mostly brought to market in the shape of meal. The cottiers in many parts of this district are principally engaged in the linen manufacture; though, since the erection of thread-mills at Belfast and elsewhere, this is much less the case than formerly. Many of the linen weavers occupy cabins without any land attached to them; hiring an acre or two, for grass or potato land, from some farmer or manufacturer in their vicinity, for which they pay an exorbitant rent. The custom of hiring labourers to assist in field operations is nearly unknown: the neighbours all assist each other in their more considerable occupations, such as sowing and reaping. The cottages are but small, particularly as compared with the numerous inmates that issue from them; but many of them are whitewashed, have a neat appearance, and are clean and comparatively comfortable within. The competition for small patches of land in this district is extreme; and besides heavy rents which are rarely, if ever, remitted, all new tenants have to pay a large sum to the outgoing tenant. This is called the "tenant's right;" and sometimes fetches the enormous price of from 7*l.* to 10*l.* an acre! It is invariably paid even when the outgoing tenant has been ejected for arrears of rent.—(*Wakefield*, vol. i. p. 363.; *Dubordieu's Down*, p. 39., &c., *Appendix* F, *Poor Inquiry*, passim.)

2d. Under the second district, Mr. Wakefield comprises the northern part of Antrim, Londonderry, the north and west parts of Tyrone, and the whole of Donegal. Agriculture differs materially in different parts of this district. In most parts of Donegal it is in a very depressed, wretched state. A considerable part of Londonderry is divided into very small farms, not exceeding 5 or 6 acres. In other parts, however, the farms are much larger, exceeding, perhaps, 100 acres. Labourers on these farms are usually cottiers, who pay for their small slips of land by working for the principal lessees, who also supply them with other articles, but generally at an exorbitant price.—(*Curwen's Letters on Ireland*, vol. i. p. 221.) This part of the country used formerly to import grain; but such is no longer the case. On the contrary, the exports of corn, butter, and provisions from Londonderry, Coleraine, &c. are, at present, very considerable, and rapidly increasing. Large districts in the north of Ireland now produce very good wheat, that were formerly considered quite unsuitable for its growth; and, in consequence, the exports of wheat are every where increasing, while those of oats are, in some instances, diminishing.

3d. The third district is of small extent, including only the northern parts of Fermanagh. The farms are much larger in this than in the preceding district; and agriculture is superior in the ratio of the greater size of the possessions. Potatoes are planted on a lea, the land being twice traversed; flax, oats, and weeds constituting the course. A good deal of wheat is grown; but oats are the prevalent crop. Mr. Wakefield says that the farmers in the neighbourhood of Enniskillen are rich enough to be able to eat butcher's meat daily, and drink smuggled wine.—(*Wakefield*, vol. i. p. 379.) And Mr. Inglis says, "that potatoes are not the sole diet here; the country is a most fruitful one; and much of the wheat and oats is consumed in the surrounding district."—(*Ireland in* 1834, vol. ii. p. 153.)

4th. The fourth district comprises Sligo, Mayo, Galway, Clare, Leitrim, and parts of Roscommon and Longford. In parts of this district, spade culture is extensively pursued; but the land is mostly cultivated by the common plough of the country, the improved Scotch plough being used only on the farms of a few improvers. The barbarous custom, long since prohibited by statute (*Leland's Hist. of Ireland*, vol. ii. p. 486.) of yoking horses and cattles to the ploughs by the tails, is said by Mr. Wakefield to have been practised to some extent in Roscommon, so late as 1811; but it would appear, from the statements of Mr. Weld, to be now wholly abandoned.—(*Survey of Roscommon*, p. 654.) Oats form the principal crop; but wheat and barley are both pretty extensively cultivated. A large extent of land is leased to several persons jointly, according to the village system; but this pernicious practice is said to be decreasing. It is quite the reverse, however, with the *con-acre* system.—(See *ante*,

p. 381.) This ruinous practice has spread itself, in the course of the present century, over the whole province of Connaught, and is every day extending its ravages. When old grass land is let on the *con-acre* plan, it is usual, if it be *very rich*, to begin by planting potatoes on the grass; but the far more common practice is to prepare for potatoes by *paring* and *burning* the surface, and spreading out the ashes as manure. In either case, the potato crop is followed by four, five, or it may be ten or a dozen, corn crops in succession, till the land be reduced to a *caput mortuum*, when it is left to be recovered by the *vis medicatrix naturæ!* An intelligent witness, examined by the Agricultural Committee of 1833, stated, that when he left Mayo, "the country appeared as if *it were all on fire!* I should say that *a fifth part of the surface of the county is either burning, or is now covered with ashes.* I really do not think I am out of the way in saying a fifth." — (*Evidence of Thomas S. Linsay, Esq.*) No country was ever subjected to such abusive treatment. And as land is only burned when it is taken from grass to be subjected to the *con-acre* plan, the statement of Mr. Linsay, as to the extent of land on fire, even supposing it to be unintentionally exaggerated, shows the extraordinary progress of this destructive system. The legislature has exerted itself to repress the evil, by forbidding the burning of land under a heavy penalty. Hitherto, however, the Act has been a mere dead letter; and unless the landlords and principal tenants vigorously exert themselves to abate the nuisance, it is not easy to see how it can be abated by any one else. Mr. Dutton condemns, in severe terms, the indifference of most landlords of Galway, as to the condition of the tenants and cottiers on their estates; but we regret to say that this indifference is not confined to this county, or even to the province of Connaught. — (*Dutton's Survey of Galway*, p. 340.) Mr. Wakefield says that the following extract from Dr. M'Parlan's account of the tillage of Leitrim exhibited a faithful picture of the general cultivation of Connaught in 1810. "The mode of culture is with a long narrow spade, commonly called a *loy*. This machine they prefer to ploughs, and assign many reasons for doing so. The hills, of which nearly the whole country is composed, are very steep, beset with stones, and, notwithstanding the soil being generally gravelly, so tough and retentive of wet, as to render ploughing objectionable. They also complain of a scarcity of horses; but above all, they assign, as a peculiar inducement, the abundance of crop produced by the loy culture, compared with that of the plough. In some of the more level parts, ploughing is in practice; and in some others, they unite both, first ploughing, then mincing and dressing with the loy. The soil being in general of the stiff argillaceous kind, wherever it is so, the potatoes are planted by dibbling with the *steeven*. In a few places they plant by spreading the oats on the dung or green turf, and then digging up the furrows; and in still fewer places, near the sea, where the soil is light and friable, they plant the potatoes by drilling with a one-horse plough, particularly in stubble and old potato ground. From the middle of April to the middle of May is the common time of planting potatoes; and very little earlier that of sowing oats; as the coldness, the clamminess, and wetness of the soil require the vegetative inspiration of heat to be productive. The manner of preparing the soil for oats is censurable, particularly when it is seldom ploughed; but even when prepared with the loy, it is seldem sufficiently worked or minced; for, after sowing the seed and harrowing, which is often done here by *trailing green bushes along the ridges*, the whole banks of these ridges remain unbroken, and the vegetation appears as if the ground had been drilled, or the seed dibbled in irregular ranges."—(*Survey of Leitrim*, p. 25.) This paragraph was written eight and twenty years ago; but it is seen from the evidence collected by the Commissioners of Poor Inquiry, that but little improvement has been effected in the interim. The land is usually foul and overrun with weeds; and except in a very few instances, there is no such thing as a rotation of crops. The custom still is to take one or two crops of potatoes; and to "follow them up by as many successive crops of oats as the land will produce," leaving it to recover, as it best may, from the state of exhaustion to which it is reduced.—(*App.* F, *Poor Inquiry*, pp. 357. 369.)

5th. The fifth district comprises Limerick, Kerry, the northern parts of Cork, and the county of Waterford. Pasturage is more attended to in most parts of this district, particularly in Limerick, than tillage: the latter, though improving, is still in a very rude state. Land, especially in Cork, much subdivided, and the tillage farms very small. Speaking of this county, Mr. Townsend says: "The size of farms admits all the variety that can be found in a country where none are large. The generality of those held by a single farmer are small; such as exceed 30 acres are often held in partnership. This species of tenure is further promoted by their common law of inheritance, which divides the land of the father among his sons. So much are they attached to this apparently equitable law, that, in case of joint tenants, they never take advantage of survivorship, but suffer the father's part to go to the sons. In consequence, subdivisions are every day multiplying, and little farms becoming still less." — (*Survey of Cork*, vol. i. p. 255: and 206.) It is probable, and it is to be hoped, that the Sub-letting Act has given a check to this baneful practice; but it will be a very difficult matter to get the better of so deep-rooted a habit. Mr. Wakefield says that in Waterford farms are divided, not amongst the sons, but amongst the daughters! — (Vol. i. p. 251.) The system of agriculture, if we may so term the torture to which the soil was subjected, used to be as bad as possible. "Potatoes engross the whole manure of the little farmers, as well as the whole of their labour. Corn follows corn, as long as the ground is capable of producing it, after which it is left in a state of cruel exhaustion to be recruited by the benignity of nature. Nothing is more common than to see, on land of good natural quality, crops not worth even the little labour that has been expended upon them. In the culture of oats, and sometimes also of barley, the whole process often amounts to no more than scattering the seed on the stubble, and ploughing it in. — (*Townsend's Cork*, vol. i. p. 207.)

But though still very bad, considerable improvements have been effected within these few years in Waterford and other parts of this district. Scotch ploughs, carts, &c., have been pretty extensively introduced. Clover has in some parts got into general use; but turnips are only raised in small quantities by gentlemen; and the land is not half cleaned. The common Irish cow is the general dairy stock. It is said to yield a large supply of butter, but does not fatten easily, or to a large size. Some of the best English breeds have, however, been introduced; and most of the principal dairymen keep English or half-bred bulls. Pigs of an improved species are very generally met with. (*App.* F, *Poor Inquiry*, p. 416, &c.)

6th. The southern parts of Cork form the sixth district. Spade culture is here very general; the farms unusually small; and the farmers would be called in England petty cottagers. Hogs constitute the main support of the poor. — (*Townsend's Cork*, vol. i. p. 194.) Some estates in Cork are, however, much better managed than others; and within the last twenty years, there have been some material improvements made in the agriculture of the county, and in the implements by which it is carried on.

7th. The seventh district includes part of Tipperary, with Queen's and King's Counties. This is, perhaps, the best farmed district of Ireland. Still, however, a systematic course of husbandry is only pursued on the estates of a few proprietors, who employ Scotch and English stewards, and by a few of the larger class of tenants. The system followed by the great mass of occupiers may be still truly described as "wretched." Turnips are seldom met with; and one or more crops of potatoes, followed by successive corn crops, continues to be the prevailing practice. The stock of cattle has, however, been a good deal improved by the introduction of short horns and other English breeds. Improved implements are also in general use. The competition for small holdings is excessive.

8th. The eighth district comprises Wexford and part of Wicklow. Beans are here sometimes introduced; but they are mostly sown broadcast, and are seldom hoed. Ploughing is still sometimes performed according to the old method of the country; but improved Scotch ploughs, drawn by two horses, have been introduced, and will, it is to be hoped, at no distant period, supersede all others. In parts of Wicklow, the dairy system is generally introduced. The dairies vary in extent from 5 to 20 cows, and there is the greatest discrepancy as to the mode of their management. Very frequently there is a great want of cleanliness. The breed of cattle has been signally improved by the introduction of the Teeswater and other English breeds. The sheep kept on the Wicklow mountains have, also, of late years, been improved by crossing them with Cheviots, &c. (*Appendix* F, *Poor Inquiry*, p. 388.)

9th. The ninth district includes the northern part of Kilkenny, Kildare, the cultivated parts of Westmeath, Meath, and Louth. Tillage farms generally small. In Kildare, where they are largest, they vary in some places from 50 to 200 acres; but in many parts they do not exceed from 5 to 20 acres. Wheat is largely cultivated in this district. Clover has been introduced, but too frequently it is sown upon land that is foul and exhausted. The turnip culture has also been introduced, but not to any considerable extent, and only on farms occupied by proprietors and the superior class of tenants. Both the pasture and crop land are very frequently overrun with weeds. In the Barony of Kells, in Meath, a small tenant, who was remonstrated with by a Commissioner of Poor Inquiry, on the foul state of his crops and grass land, answered that the rag-weed and thistles sheltered and improved the grass; and that were he to pull the weeds from among his potatoes, the wind would break their stalks, and they would be injured! (*Appendix* F, p. 382.) Now it is material to observe, that there is nothing peculiar in this speech. It, in fact, embodies the opinion, and explains the practice of at least nine tenths of the small occupiers of land in Ireland. Still, however, there is evidence of a decided amelioration even in this district. Improved ploughs and carts are very generally met with; though in some parts, the old plough of the country, drawn by 4 or 5 horses, and doing less work than the improved Scotch plough, and at more than double the cost, still keeps its ground. The system of planting potatoes in lazy beds has, in many parts, been superseded by the drill; and the quality of the corn and cattle brought to market is better than at any former period. Rents here, as every where else in Ireland, are very high. This is owing to the demand for land created by an excessive population, who, not being half employed, could not exist without a patch of land on which to grow potatoes. A scarcity of that root is, indeed, as Mr. Wakefield has observed, as fatal in most parts of Ireland, as a scarcity of rice is in India.

Mr. Wakefield gives the following table of the average produce per acre of the above nine districts: —

Districts.	In Pounds Avoirdupois.										In Gallons	
	Wheat.		Bear.		Barley.		Oats.		Potatoes.		Flax.	
	Seed.	*Prod.*	*Seed.*	*Prod.*	*Seed.*	*Prod.*	*Seed.*	*Prod.*	*Seed.*	*Prod.*	*Seed.*	*Prod.*
1st district - - -	224	2,272	203	3,500	209	2,682	333	2,636	2,392	22,248	30	785
2d — - - -	171	2,135	-	- -	203	2,946	291	3,227	1,383	15,183		
3d — no return.												
4th — - - -	222	2,024	196	3,584	244	2,765	308	2,749	2,144	22,289		
5th — - - -	243	2,537	261	4,480	249	3,024	298	2,970	2,592	24,298	-	972
6th — the returns, being according to the Eng. acre, are not taken into the aver.												
7th — - - -	232	1,857	187	3,131	173	2,828	310	2,263	2,660	22,358		
8th — - - -	186	2,020	-	- -	296	2,614	368	2,606	2,632	21,140	-	896
9th — - - -	257	2,353	211	3,494	246	3,233	361	3,063	2,630	27,113	-	894
Average prod. in Winch. bshl. per Irish acre - -	3·38	33·6	4·01	69·2	4·4	54·6	8·4	72·4				
Average prod. in Winch. bshl. per Imperial acre - -	2·086	20·74	2·47	42·7	2·71	33·7	5·18	44·5				

But, supposing this table to have been pretty correct when framed, there can be no doubt that the average produce of the country, particularly of wheat, has increased considerably in the interval.

IV. *Crops.*— *Wheat*, as has been seen from the preceding details, is not very extensively cultivated in many parts of Ireland. According to Mr. Wakefield, it was nearly unknown, when he visited the country, in Monaghan, Tyrone, Derry, Donegal, Sligo, Mayo, Leitrim, and Cavan; but was grown to a considerable extent in Kilkenny, King's and Queen's Counties, Carlow, Dublin, Meath, Louth, and parts of Limerick, Tipperary, Clare, and Cork. But even at the period when Mr. Wakefield's work was published (1812), wheat was raised in considerable quantities in Derry*; and it is certain that its culture there, and in almost every other part of the kingdom, has been very greatly extended since 1815. It seems, however, to be pretty well established, as well from the great increase in the importation of Irish oats and oatmeal into England, as from the testimony of competent judges, that the culture of oats has extended more rapidly than that of wheat. And as the climate of Ireland, and the practices followed, are more favourable to the growth of the former than of the latter species of grain, it is also believed, speaking generally, to be the most profitable to the farmer. Wheat is generally sown after potatoes or fallow. Though much improved, it is still, for the most part, coarse and inferior in quality, not yielding so much saccharine matter, by from 10 to 15 per cent. as average English wheat. Mr. Newenham says, that the badness of the seed is the principal cause of the inferiority of Irish wheat.—(*Natural and Political Circumstances of Ireland*, p. 314.)

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* See *Mr. Curwen's Letters written in* 1813. vol. i. p. 222.

Barley, Oats, &c.—Barley is not very largely cultivated. It is commonly sown after potatoes. Of all the species of grain, oats is by far the most extensively raised: it is believed that, throughout the kingdom, there are at least *ten* acres of oats for *one* of any other corn crop. Irish oats are inferior to the English, but their quality has recently improved. Potato oats have been generally introduced; though, in the mountainous districts, black oats continue to be the favourite species. The latter have, also, been extensively grown of late years in the lower parts of Waterford, and other counties; in consequence, it is said, of successive failures of the crops of the Potato oat.—(*Appendix* F, *Poor Inquiry*, p. 415.)

The Potato is, however, the distinguishing and peculiar crop of Ireland, and has contributed not a little to place her in the singular position she now occupies. The soil and climate are extremely well suited to its growth; and the country is celebrated as well for the excellent quality, as for the extraordinary, quantity of the potatoes raised in it. They are grown on every species of soil, mostly in lazy beds, and rarely, except in some of the eastern counties, in drills. The produce is from about 800st. to 1,000st. an acre, at 21 lbs. the stone; that is, from 16,800 to 21,000lbs.—(*Wakefield*, vol. i. p. 406.) The greatest attention is paid to the culture of potatoes. "I have never seen any field cultivation in England, except, perhaps, hops, where more diligence is discovered. Every ounce of manure is carefully husbanded, and every weed is destroyed. The drainage is made complete; and the hoe, or rather, the apology for that instrument, is constantly going. The potato is the only produce the cottier reserves for himself. All the rest—cattle, corn, butter, pigs, poultry, and eggs—go to the landlord. As long as the potatoe lasts, he and his family have abundance. They thrive under it, and with plenty of ventilation, enjoy good health, and have the cleanest skins in the world. But if the crop fail, or the season should prove unfavourable for preserving it, the months of April and May are trying seasons; then it is they are driven to subsist upon weeds, fevers spread, and the utmost distress prevails."—(*Ireland and its Economy, by L. E. Bicheno, Esq.*, p. 21.)

Flax and Hemp.—The first of these is cultivated to a pretty considerable extent, particularly in Ulster. According to Mr. Wakefield, there were, in 1810, 100,000 acres under this crop. Its culture, owing, perhaps, to the withdrawal of the bounties, subsequently declined; but, during the last seven years, it has increased with unexampled rapidity, particularly in Down, Antrim, and Derry. Foreign linen yarn may, at present, be imported into Ireland. The culture of hemp is quite inconsiderable. In 1810 there were only 323 acres under this crop!

The *indigenous grasses* of Ireland are not of any peculiar excellence. Notwithstanding all that has been said of fiorin grass, its superior value and utility may be questioned. Hay is seldom obtained from sown grasses, and consists generally of the spontaneous produce of the soil. Mr. Newenham, in his *View of Ireland* (p. 314.), published in 1809, doubted whether there were then so many as 10,000, or even 5,000, acres under clover in the whole island! Latterly, however, it has been cultivated to a much greater extent.

There are few live hedges in Ireland: in the limestone districts, stone walls, and in other places turf banks, are the usual fences.

V. *Grazing.* — Most parts of Ireland are admirably fitted, as well by the humidity of the climate as by the nature of the soil, for grazing. In this respect, she is as incontestably superior to Great Britain, as she is inferior to the latter in her corn-growing, or rath6r corn-ripening, capacities. As previously stated, this peculiarity was remarked by Pomponius Mela. "*Cœli*," says he, "*ad maturanda semina iniqui, verum adeo luxuriosa herbis, non lœtis modo, sed etiam dulcibus, ut se exigua parte diei pecora impleant.*" — (Lib. 3. cap. 6.)* And Boate, whose accuracy is unquestionable, says, that "Although Ireland, almost in every part, where the industry of the husbandry applieth itself thereto, bringeth good corn plentifully, nevertheless hath it a more natural aptness for grass, the which, in most places, it produceth very good and plentiful of itself, or with little help." — (*Natural History of Ireland*, Lond. 1652. p. 88.)

Even the mountains of Ireland yield, for the most part, a good deal of herbage, and are, in this respect, very superior to most of those of Scotland and Wales. Horses are bred on the mountains of Mourne; and immense droves of cattle in the mountainous districts of Galway, Kerry, &c. Arthur Young affirms that on Macgillicuddys reeks, "which is the wildest and most desolate region in Kerry, sheep are fattened better than on the low grounds."

But, notwithstanding this superior adaptation of the land for pasture, the proportion in grass has been rapidly diminishing since 1784. This has arisen partly from the stimulus given to cultivation by the bounty acts that were then passed; partly from the very high prices that corn bore during the greater part of the war; and partly, and principally, from the extraordinary demands and high rents given for small patches of land. It was thought by many that the passing of the Subletting Act would check the extension of tillage; but hitherto it does not seem to have had that effect; and in Connaught and other districts it is rapidly increasing. There can, however, be no doubt that a diminution of tillage, and an increase in the quantity of land in pasture, would be one of the least equivocal symptoms of an improvement in the rural economy of the country.

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* Mela adds a circumstance, which, though fabulous, shows the high opinion entertained in antiquity of the richness of the Irish pastures. "Se exigua parte diei pecora impleant, et *nisi pabulo prohibeantur, diutius pasta dissiliant.*"

Irish cattle consist principally of two leading varieties — middle and long horns. The first are found principally in Kerry, Mayo, and, generally, in all the mountainous and rugged parts of the country. They are small, and not very well shaped; exceedingly hardy; wild; have long coarse hair; in some places they are black, in others brindled: when removed from their native mountains to a better soil and climate, they fatten with the rapidity of the Welsh and Highland cattle. They are generally good milkers.

The other, or long-horned breed, is found in all the low and level tracts of Ireland, but principally in Tipperary, Limerick, Roscommon, East and West Meath, &c. They are much larger and heavier than the others; but mostly coarse and ill-shaped, with thick hides and enormously long curved horns, the points of which are mostly turned inwards. Latterly they have, in many districts, been very considerably improved by crossing with improved bulls from England. Attempts have also been made to introduce the improved Teeswater, or short-horned, breed into Ireland. Owing to the richness of the soil, its extraordinary aptitude for grazing, and the extent (which, though now much reduced, is still very considerable) of land in pasture, cattle and beef have always formed prominent items in the list of Irish exports. Such, however, was the ignorance of commercial principles, and the jealousy of Ireland formerly entertained in this country, that, in 1666, the importation of Irish cattle, sheep, and swine, and of Irish beef, pork, and bacon, was declared to be a "common nuisance," and absolutely prohibited! The redundancy of lean stock, occasioned by this proceeding, first lowered their price, and eventually that of fat cattle, so as to give rise to a brisk foreign demand for Irish salted provisions. The navy of France used to be victualled from Cork; and was thus, in fact, supplied with British beef cheaper than the British themselves! — (*Newenham's View*, p. 108.) At length this unjust and absurd prohibition was repealed in 1759, and Irish lean cattle and beef have since been largely imported into Britain. Latterly, however, or since the introduction of steam navigation, it is usual to fatten cattle in Ireland before sending them to England; and Liverpool and Manchester are, at this moment, principally supplied with Irish beef.

Dairy. — The dairy, though in a backward state, is probably the best managed department of Irish husbandry. Large portions of Kerry, Cork, Waterford, Carlow, Meath, Westmeath, Longford, and Fermanagh, as well as the mountains of Wicklow, Leitrim and Sligo, are occupied by dairy farms. Butter is the chief produce. The average number of cows on a dairy farm varies from 5 to 30: two acres of land, of middling quality, are deemed necessary for the subsistence of a cow; and the annual yield of butter may be estimated at 160 or 170 lbs. a head. Cows of the native breed are the common dairy stock; but Ayrshire, and other British breeds have been introduced. The quality of Irish butter differs materially. The best is said to be made in Carlow and Waterford, the worst in Limerick and Meath. These differences may in part, perhaps, be ascribed to differences of soil and pasture, but there can be no doubt that they are mostly ascribable to management. This, though improved, is in many parts very defective; there being very frequently an extreme want of cleanliness and attention. Besides what is sent to England, Irish butter is exported to the East and West Indies, Portugal, &c. That offered for sale was formerly inspected and branded by public officers appointed for the purpose; but this was found to be rather a protection to, than a security against, fraud; and the regulations have been advantageously abolished within these few years.

Sheep.—Roscommon, Galway, Clare, Limerick, and Tipperary are the chief breeding counties for sheep; and Galway, Clare, Roscommon, Tipperary, and Meath, those where they are fattened. The sheep are mostly long-woolled, and very large; they are never kept in sheepfolds, and hardly ever fed on turnips,—a circumstance chiefly owing to the very limited demand for mutton among the labouring people. —(*Wakefield*, vol. i. p. 341.)

Hogs are in Ireland a very important stock. And yet, the old Irish breed is about the worst that can be imagined—very long-legged, thin-sided, lank, haggard, and most unprofitable. Latterly, however, they have, in some districts, been crossed with the Berkshire and other improved English breeds, and have consequently been a good deal improved. "I have often," says Mr. Wakefield, "been at a loss to account for the number of pigs which I everywhere saw around me, not being able to discover where they could be bred. But it is to be observed, that the pig is an inmate of every Irish cabin, and remains there for a considerable time: the hog, indeed, is as much a domestic animal in Ireland as the dog, and becomes so habituated to the warmth of the cottage, that it seldom strays far from home."—(*Account of Ireland*, vol. i. p. 254.) But hogs seem, in many parts of Ireland, to be now giving place, as cottage inmates, to goats. The latter are still more easily kept than pigs, and are particularly useful, by furnishing a considerable supply of very nutritious milk.

Large quantities of bacon and hams are cured in Ireland, and exported to England. They are comparatively coarse and ill-flavoured, but proportionally low-priced. Their inferiority results partly from the bad feeding of the animal, and partly from the want of proper skill and attention in the process of curing.

"The cow, the pig, the goat, the turkies, of which large numbers are raised," says Mr. Bicheno, "are as much a part of an Irish cottier's family as the children. They grow up together, eat of the same meat, drink of the same cup, and lie in the same bosom. The ordinary answer, when you remonstrate with them about these intrusions, is now, as of old—'And sure hav'n't they a right, for don't they pay the rint?'"—(*Ireland and its Economy*, p. 32.)

VI. *Causes of the depressed State of Agriculture in Ireland.*—To enter fully into this inquiry would require a very long essay, or, rather, a pretty large volume. We shall, therefore, content ourselves with noticing a few only of those circumstances which seem to have had the greatest influence.

Law as to Leases—Division of Land.—We have already remarked that in England leases are regarded as personal property, and that they may be assigned by the individual in occupation, unless a special provision be made to the contrary. Peculiar circumstances, at the head of which must, perhaps, be placed the institution of the poor laws, have contributed to prevent this law from having any very injurious operation in England; but in Ireland, to which it also applies, these circumstances have not existed; and it has been productive of the most mischievous effects. It was customary among the Irish, from the earliest period, to divide all sorts of property, freehold as well as leasehold, equally amongst their children.* But as most part of the property of Ireland has, first by conquest, and subsequently by forfeiture, come into the hands of English families, estates have been exempted from the operation of this system. It has, however, continued to prevail among the occupiers of the land; whose farms have been usually divided, sometimes during their lives, or at farthest, at their death, amongst their sons; and it not unfrequently, also, happens that the daughters are portioned by assigning patches of land to their husbands.—(See *antè*, p. 382.) And this, combined with the stimulus given to the splitting of farms by the bounty acts, and the increased demand for corn, and by the desire to multiply freeholders, without being countervailed by the operation of a compulsory provision for the poor, led, as already stated, to that minute subdivision of the land, and excess of population, that now prevails everywhere in Ireland.

We believe, too, that this system, how different soever in its ultimate results, was at the outset by far the most profitable. Where land is occupied by tenants possessed of capital, and farming for a profit, it always fetches more rent, all things considered, when divided into considerable farms than when split into minute portions. But in Ireland, land has been sought after, not as in England and Scotland, as a means of carrying on an advantageous business, but as the *sine qua non* of existence; and such has been the competition for small patches, that their occupiers have always been ready to pay as rent all that they would furnish above what was required for their own scanty subsistence. The rents promised under a system of this sort, were frequently much larger than could have been afforded by tenants possessed of capital. This advantage, as might easily have been foreseen, could only be temporary. There were no means, except by fresh subdivisions of the land, for providing for the increased population such a system was sure to call into existence; and, owing to this, the whole produce of the soil has already become in many places inadequate for the support of the paupers hutted upon it; and even where matters have not attained to this extremity, a deficiency in the crops of oats or potatoes never fails to disable a large proportion of the occupiers from paying their rents.

Other circumstances conspired to render this system universal. Had the landlords let their estates in tillage farms of moderate extent, it would have been necessary for them to expend considerable sums in erecting suitable buildings and accommodations. But this is a sort of outlay to which they have been always exceedingly averse; and upon which, indeed, with very few exceptions, they have never expended a single shilling. The confiscations by which most of them originally acquired their estates, and the sudden revolutions to which property in Ireland was for a long time subject, generated feelings in their minds, and gave rise to systems of management, that have continued to exert a powerful influence long after the remembrance of the circumstances in which they originated might have been supposed to be effaced, or the circumstances themselves were entirely changed. From the first invasion of Ireland by the English in the reign of Henry II. down to the accession of George I., or rather to the suppression of the rebellion of 1715, the estates of Englishmen in it were held by a very insecure tenure; and were looked upon as a species of property of little prospective value, and useful only as the source of immediate supplies. Hence the origin of that deep-rooted disinclination, already adverted to, amongst the landlords to make any outlays that could possibly be avoided, and their indifference as to the influence of any measures on the future condition of their estates, provided they were immediately productive. The landlords of Ireland are neither better nor worse than those of England. The different circumstances under which they have been placed, explains the differences in their conduct, and made them pursue a policy not less ruinous to their own interests than to those of the public.

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* *Davis's Discoverie of the True Causes, &c.*, p. 172. ed. 1747.

Never feeling completely satisfied as to the security of their property, looking upon their tenants more in the light of hostile savages it would be absurd to conciliate, than of rude dependents who might be attached by just and liberal treatment, ignorant of their language and habits, and despising or persecuting their religion, it was not in the nature of things that the landlords could feel much interest in the improvement of their estates, or in the condition of their tenants. Both parties looked only to immediate gain, and dealt with each other precisely as they would have done with Russians or Hindoos. Thus it is that "almost every proprietor in Ireland is a *trader in land*. He has never been in a situation to command opinions, or to feel the consequences this position imparts to the possessor, and therefore treats his land simply as an article of profit. Hence he resorts to methods of letting which are ruinous to the tenant, and, in the end, will be ruinous to himself. He lets by auction and tender, and encourages secret biddings; and as competitors have never been wanting in a country where the occupation of land furnishes the only employment, and the population presses so hard upon subsistence, he has never felt much restraint upon his cupidity. The necessity of holding land has existed to so great a degree, that the rent which the land would not pay has been derived from other sources, such as an illegal still, a little home-made linen, by the earnings of labour from the landlord at a low price, and sometimes by savings acquired in England. Many proprietors have been known, and, indeed, they but thinly disguise their intentions, to favour smuggling, that they might obtain better rents."—(*Bicheno's Ireland and its Economy*, p. 123.)

The grand evil in Ireland has been, and is, the too great subdivision of the land; and it is but justice to observe, that though an Irish landlord had been aware of the consequences that were to result from parcelling an estate, and disposed to prevent it, the task would have been exceedingly difficult. It was to no purpose to insert in the lease of a farm, clauses prohibiting its being subdivided or sublet. The courts were hostile to such limitations; and instead of the forfeiture of the lease following its infraction, it was merely sent to a jury to assess damages; which, when they were given, were little more than nominal. In consequence of this vicious system, it frequently happened, as has been previously seen, that farms let to single tenants for a moderate term of years, were occupied at its expiration by some 20, 30, or 50 tenants, whom it was all but impossible to eject!

Subletting Act.—But notwithstanding the circumstances now mentioned, it is obvious that had the majority of the landlords been alive to the consequences of their conduct, or had they been compelled, by means of a poor law, to provide for all who obtained a settlement on their estates, they would, being a decided majority in parliament, have early altered the law as to the succession to farms, and obliged the courts to give effect to the conditions in leases. But, with very few exceptions, they seem to have entertained no doubts as to the soundness of their policy, and had the infatuation to believe that they should be able to squeeze exorbitant rents out of multitudes of starving tenants. At length, however, the evil of subdivision and of a redundant population became so obvious and pressing, as to arrest the attention of most landlords; who discovered, when it was too late, the signal error they had committed in allowing their estates to be split into minute portions. The disfranchisement of the 40*s*. freeholders, in 1829, took away one of the principal motives to subdivide estates; and some even of those who had been among the principal patrons of the practice, became suddenly impressed with the conviction that, unless an effectual stop were put to subdivision in future, the whole country would be frittered down into potato gardens, and that it would be impossible to collect any rent. Under the influence of this feeling, the legislature passed the Subletting Act, by which the underletting of farms was prohibited without the landlord's consent in writing, and which also granted him a summary process for redress. The Irish demagogues raised a loud outcry against this act; but, whatever may be thought of the conduct of some of those by whom it was approved, we are satisfied that it was a highly proper measure, and there can be little doubt that it will be productive of considerable advantage.

Unfortunately, however, there is a large extent of Ireland to which the provisions of this act will hardly apply. A great deal of the country is let on perpetual leases, the landlords having no other interest in the estates than the receiving their quit rents: a good deal, too, of that part of the country which is let on terminable leases, has been let for the lengthened periods of 3 lives, or 31 years. Under such circumstances, it is quite clear that any practical change in the nature of the tenures under which Irish farmers hold their lands can only be introduced slowly; and that the apprehensions of those who fear, or affect to fear, any sudden shock to established practices and systems by the introduction of the Subletting Act, were most unfounded.

But though the Subletting Act could be every where acted upon, we do not think that it would of itself be adequate to check the evil. Many landlords are yet unconscious of the mischief arising from the process of subdivision; and it is on this ground, among others, that we think a properly devised system of poor laws would be advantageous to Ireland. It would compel every man who had property to attend to the condition of the poor, and to prevent the subdivision of his land and the undue increase of cottages.

Absentees — Middlemen. — Those even superficially acquainted with the history of Ireland, are aware that nine-tenths of its surface have been forfeited at various times, particularly under Cromwell and William III. The estates so forfeited were, for the most part, assigned to English noblemen and gentlemen, or to English incorporations. It was not to be expected that such persons should leave their own country to reside in Ireland; and owing to the barbarous state of the latter, and their indifference to its condition, they were glad to let their lands in large tracts to such speculators as could give them any reasonable security for the rent, allowing these to relet them in smaller portions to the inhabitants. Hence the origin of *absentees* and *middlemen* — both of them obviously growing out of the peculiar circumstances under which Ireland has been placed. These, as every one knows, have, uniformly almost, been reckoned among the prominent causes of her backward condition. But, without pretending to say that they have been altogether innocuous, it is abundantly certain that the injurious influence ascribed to them has been very much exaggerated. It would be foreign to our purpose to enter upon the disputed question as to absentee expenditure. Our opinions with respect to it are already before the public, and nothing has occurred to satisfy us that they should be either changed or in any degree modified.* We have always been ready to admit that the residence of landlords upon their estates may be, in many respects, highly advantageous. It is natural to suppose that they will be inclined, instead of spending their whole incomes, to lay out a part of them on improvements, in building houses for their tenants, making roads, bridges, &c. It has, however, been affirmed that, in point of fact, the estates of the resident Irish landlords are not, in these respects, at all superior to those of the absentees; but, without stopping to investigate the precise degree of credit that ought to be attached to this statement, those who consider that Scotland has about the same proportion of absentees as Ireland, must, we think, admit that the influence of absenteeism in depressing the latter, has been very greatly overrated. It is not that many of the landlords have been absentees, but that, whether absent or resident, they have generally acted as if they had no permanent interest in the improvement of the soil, or the prosperity of the mass of the inhabitants, that the wretched condition of the population is to be ascribed.

As to middlemen, we admit it would have been much better had they never been introduced. This, however, is merely another mode of saying that it would have been much better had Ireland never been in those circumstances that made middlemen necessary. In the situation in which the owners of Irish estates found themselves subsequently to the expulsion of James II., and down to a comparatively recent period, they seem to have had no better resource than the employment of middlemen. It is probable that their employment has been continued longer than necessary; it being always difficult to get rid of a system once firmly established. It is truly observed by Mr. Bicheno, that "The middlemen in Ireland, who have long leases, are, to all intents and purposes, the real and efficient owners of the estate, and have as deep an interest in the welfare of their tenants, as if they were in possession of the fee. I know not that any difference exists between those estates which are in the hands of the original landlord, and those which are sublet to intermediate persons. As far as I could observe, the same defects prevailed throughout; always making exceptions of certain individuals belonging to each class who had introduced a better system." — (*Ireland and its Economy*, p. 106.) Most, as it appears to us, of the mischievous influence ascribed to middlemen has really grown out of a gross defect in the law. It was not, and is not, uncommon in Ireland for 3 or 4, or more, intermediate tenants to be placed between the landlord and the cultivator of the soil; and although the latter had paid his rent to his immediate superior, from whom he acquired the land, yet, in the event of his failure, or of the failure of any other intermediate tenant, the landlord was authorised to come upon the cultivator, who was thus frequently obliged to pay his rent over again. The Subletting Act has put an end to this scandalous injustice, by declaring that no landlord shall be authorised to prosecute a subtenant, admitted to hold by his consent, for rent, in the event of the subtenant having made a *bonâ fide* payment of such rent to his superior. This change in the law will go far to strip the middleman-system of its most obnoxious feature; and should good order and security be ever established in Ireland, it will gradually disappear.

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* *Edinburgh Review*, No. 85., art. 3.; *Evidence before Irish Committee of* 1830.

Partnership Tenures.—The same circumstances that gave rise to middlemen seem, also, to have given rise to the still more objectionable practice of letting lands in partnership, sometimes even to a whole village! The tenants being jointly and separately bound for the rent, it is pretty well secured to the landlord; but in all other respects the tenure is about the very worst that can be imagined. When the land is held for the purpose of grazing, it is always overstocked, and the tenants quarrel about the liberty of turning the greatest number of miserable beasts upon it. When, on the other hand, it is to be broken for tillage, they divide it into shares; but they are so tenacious of every inch of land, and so apprehensive of being cheated by others, that a division is never effected without much altercation and difficulty. However small the separate portions, they do not generally lie together, but are most commonly dispersed in different quarters; so that a man having 2 acres of tillage land, may have 2 roods in coarse ground, 2 in deep, 2 in stony, and 2 in wet, if these varieties happen to occur. And even after the division is made, each of the holders is liable for the failures and deficiencies of all his neighbours; so that they are wholly divested of any portion of that security without which there can be neither industry nor civilisation! This monstrous system prevails in many extensive districts; and yet we wonder at the barbarism of the Irish.—(*Tighe's Survey of Kilkenny*, p. 418.)

Tithes have undoubtedly been far more injurious in Ireland than in Britain. This is not owing to their being heavier there than here, but to the poverty of the occupiers, which makes them feel more sensibly any burden of the sort; and to the circumstance of the great majority of the occupiers being Catholics. It is not to be imagined that the latter should peaceably submit to make such a payment for the support of a Protestant church; and we hesitate not to affirm, that the total abolition of tithe, in law and in fact, is indispensable, to give so much as a chance for the tranquillity of Ireland.

The abject poverty of the people has been said to be the real cause of the distressed state of Irish agriculture. But this very poverty has itself been mainly occasioned by the circumstances to which we have now briefly alluded. The splitting of the land into minute portions has been at once the principal cause of the excessive increase and poverty of the population, and of the wretched condition of agriculture.

Improvement of Ireland.—It is alleged, indeed, that notwithstanding these unfavourable circumstances, and the unceasing agitation that prevails in Ireland, very material improvements have taken place in rural economy during the last 20 years. And this, no doubt, is true, if reference be made to the introduction of improved breeds of cattle, sheep, hogs, &c.; and to the very general use of improved implements. But the previous statements, and those given in the Reports of the Commissioners of Poor Inquiry, seem to prove that improvements in husbandry, or in the management of arable land, are as yet confined to a limited number of estates and farms, and can hardly be said to affect its general character. In his valuable tract on the poverty of Ireland (London, 1838), Lord Clements states distinctly that, "there has been no important amendment in the mode of cropping land since the days of Arthur Young. Improvements," he adds, "of other kinds may be noticed in Ireland; there are better markets and improved breeds of cattle, more mills, and better carts and ploughs, &c.; but *the course of tillage is still the same in all its essential features.* It consists simply in taking one or two crops of potatoes from the ley or grass sod, to which crop alone the manure of the farm is applied; and then taking a succession of corn crops, which follow one another without the intermission of a single season, till the powers of the soil are more or less exhausted; after which it is *let out to rest*, as the process is termed, clothing itself, for the first year or two, with weeds, and soon after, in an incredibly short space of time, with a "skin" of self-sown grass, which goes on improving till the land is again subjected to a repetition of the same course of torture. Potatoes and corn are still the never-varying products."—(P. 24.)

The extraordinary increase of the exports of raw produce from Ireland, is very generally assumed as furnishing an undoubted proof of the great improvement of agriculture; and in so far as respects the increased exports of cattle, beef, butter, hogs, &c., the inference seems to be well-founded. The breed of live stock has, as already stated, been generally improved, and the increased exports of animal products have been obtained, not only without any increase, but with a positive diminution of the land in pasture. But we apprehend it is quite otherwise with the extraordinary increase in the exports of corn and meal, &c. It seems to be the result of an extended, rather than of an improved, system of cultivation, though the influence of the latter must, no doubt, be felt in a few districts. "It is remarked," says Lord Clements, "that the export of grain has increased from all parts of Ireland, and very rapidly from those (Connaught) where no agricultural amendment whatever is visible; and as there is abundant evidence that the more substantial farmers do not increase their tillage, either by ploughing up more pasture or by inclosing wastes, but, on the contrary, that they are keeping more of their lands in grass, the extension of tillage must be attributed to the gradual subdivision of the farms among the poorer farmers, and to the work which has been achieved upon the bogs and mountains, which have been brought into cultivation by the same class of persons, as labourers on their own account. The inferior grain produced by the poorest cultivator is kept for home consumption, while the better description of corn is thereby spared for export to England."—(*Poverty of Ireland*, p. 27.)

No doubt, however, the facilities afforded by steam navigation, for a ready intercourse with Great Britain, must be of vast advantage to Ireland. They have not only opened a ready access for her principal articles to our markets, but they are of equal or greater advantage, by affording profitable outlets for a variety of minor articles, such as poultry, eggs*, &c., that were formerly all but lost. The large sums of money that are thus brought into the country, can hardly fail to have, in the end, a marked influence on all employments carried on in it. It is, indeed, true, that till tranquillity be established, and a complete check put to the subdivision of the land, the resources of the country cannot be developed. So long as the Catholics—that is, the great bulk of the people—were treated as an inferior and degraded *caste*, neither tranquillity nor improvement could be rationally expected to grow up. But this vicious policy is now fortunately abandoned; and provided this tardy concession to the just claims of several millions of people be followed by the removal of the numerous grievances that still exist, by a wise course of remedial legislation, including the establishment of a comprehensive system of national education, the institution of a provision for the catholic clergy, and for the poor, and a determination to put down disturbances, Ireland may yet assume a high station among civilised nations; and, instead of being, as at present, a burden upon, and a disgrace to England, may yield "a mighty increase of strength and revenue."

The future condition of Ireland must considerably depend on the conduct of the landlords. They have reaped nothing but disgrace by that which they have hitherto pursued, and it is surely high time that it were wholly renounced. But it is still in their power, by acting liberally and judiciously by their tenants and dependents, materially to accelerate the progress of improvement. Mr. Wakefield has made some observations on this important subject, which are so very sound and pertinent, that we shall make no apology for laying them before the reader. "Before the improvement I have in view can be accomplished, it is necessary the landholders should lay aside their former contracted ideas, and consider their tenants as fellow-men, and not as slaves born to maintain them in affluence and splendour. Such feudal ideas, thanks to the enlightened spirit of the times, are now banished from the greater part of Europe; and I sincerely trust that they have taken their departure never more to return. The people must not be kept in a state of oppression, nakedness, and misery; it is contrary to justice; it is contrary to the interest of the land proprietors, and destructive of the commercial prosperity of the country. Let the restraints imposed be removed; give instruction sufficient to make them sensible of their own importance; encourage them to hope that, by honest industry, they may rise to a better condition; excite a desire of improvement, without which its progress will be slow; let them be taught to look for comforts not at present within their reach, and to seek enjoyments, to which they, as yet, are strangers. When they perceive that there are pleasures superior to those of mere animal gratification, they will be roused from their torpor; the finer feelings will be awakened; their thoughts be directed to more laudable objects; and their actions, instead of being guided by mechanical impulse or brutal passion, be subjected to the regular and systematical control of reason." — (Vol. ii. p. 67.)

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* The price paid by England for these two articles may be estimated at from 200,000*l.* to 300,000*l.* a year!

Sect. VIII. *Produce of Timber.*

England. — Timber is entitled to rank high among the agricultural products of England. It grows in the royal forests, in the woods or plantations of individuals, and in hedge-rows. In some of the southern and in the greater number of the south-eastern and western counties, there are large stocks of timber in hedges and in pasture grounds; and the woods and plantations are, in many places, very considerable. The principal woodland counties are Kent, Sussex, Surrey, Hants, Worcester, Cheshire, with parts of Oxford, Northampton, Berks, Leicester, Nottingham, &c. In general, the western are better wooded than the eastern counties, and the southern than the northern. There are no means of forming any thing like an accurate estimate of the value or quantity of timber in England. Dr. Beeke, to whose opinion on such subjects the greatest deference is due, says that "an estate is in general considered as having less than its proportion of growing trees of all ages, if their value do not amount to near two years of the clear rent." — (*Observations on the Income Tax*, 2d ed. p. 36.) On this hypothesis, supposing the rental of England and Wales to be 29,500,000*l.*, the total value of the timber would be 59,000,000*l.* The annual income from woods, after deducting for the cost of repairs, &c., may be taken at 4 per cent. on this sum, or at 2,360,000*l.*; or, to be quite within bounds, at 2,000,000*l.*

But the statements in the Appendix to the *Fourteenth Report of the Commissioners of Naval Revision* show, beyond a doubt, that the stock of timber had been greatly reduced during the 15 years preceding 1807; and that the young plantations made during that period were not nearly so extensive as the old woods that had been grubbed up. There can be no question that the stock of old wood, particularly of oak, continued to decrease from 1807 to the end of the war. But, since then, there has been a very material increase. The fall in the price of timber lessened the temptation to cut it down; and while comparatively few woods have been grubbed up since 1815, many new plantations have been formed in different parts of the country. But, notwithstanding all this, we doubt whether there be now so large a supply of timber in the kingdom as in 1800, when Dr. Beeke's tract was published. Perhaps, if we estimated the present value of the timber of England and Wales at from 45,000,000*l.* to 50,000,000*l.*, and its yearly product at from 1,800,000*l.* to 2,000,000*l.*, we should not be very far from the mark.

Oak, though not the most abundant, is by far the most important and valuable of British trees. It affects a strong loam, or stiff clay soil; and is found in the greatest perfection in the weald of Kent, Sussex, and Surrey. It is also found in great perfection in hedgerows in Cheshire, in Hereford, Monmouth, Flint, and many other parts of England and Wales. But in several counties the annual fall of oak timber does not exceed what is required for their consumption.

The importance to a naval power like Great Britain of having a home supply of timber sufficient, at all events, for the use of the navy, has been much insisted upon. We believe, however, that we should run little risk in depending on the imports of foreign oak, teak, and other timber, for ship-building, as we do on the imports of fir, &c., for house-building and other purposes. But, supposing the importance of having an independent home supply to be admitted, the interference of government becomes almost indispensable; for the slow growth of oak, requiring from 80 to 100 years, or upwards, to come to maturity, by preventing individuals from planting and preserving oak woods with a view to profit, renders it unsafe to trust to private sources for a supply. Hence, after the country acquired distinction as a naval power, the state of the royal forests began to attract attention; and it was recommended that they should be enclosed, planted, and preserved with due care, so that they might furnish an adequate supply of timber for the navy. But the available extent of these forests is much less than might be supposed; extensive encroachments having been made upon them at remote periods, and many individuals having acquired rights to pasturage, underwood, &c., within their bounds. In the reign of Charles II., however, an act was passed for the adjudication of these claims in so far as respects the Forest of Dean in Gloucestershire, and for enclosing and planting the portion remaining to the crown. Little, however, seems to have been done in furtherance of this object till after the commencement of the late war; when, owing to the vast increase of the navy and of the mercantile shipping, a general conviction began to be entertained that it was necessary to take effective measures for providing an adequate supply of timber. In 1792, the Surveyor-General of Woods and Forests reported that there was a great and rapidly increasing deficiency in the supply of oak, and concluded by recommending that 100,000 acres, in the royal forests and elsewhere, should be set apart and planted with oaks. And, consistently with this recommendation, enforced as it was by the statements in the *Report of the Commissioners of Naval Revision*, already referred to, various incloosures have been made at different periods; so that the entire extent of the royal forests, enclosed and bearing oak, may at present be estimated at from 50,000 to 60,000 acres. We subjoin a statement showing the extent of the different royal forests, and of the number of acres in each, enclosed and appropriated to the growth of timber for the navy.

Royal Forests.	Acres in each Forest.	Acres enclosed for the Growth of Timber.	Royal Forests.	Acres in each Forest.	Acres enclosed for the Growth of Timber.
New Forest - -	66,942	6,000	Salcey Forest -	1,847	1,121
Dean Forest - -	23,015	11,000	Whichwood Forest	3,709	1,841
Alice Holt Forest -	1,892	1,892	Waltham Forest -	3,278	
Woolmer Forest -	5,945	1,700	Windsor Forest -	4,402	4,402
Bere Forest - -	1,417	1,417	Delamere Forest -	3,847	3,847
Whittlewood Forest	5,424	3,895	Parkhurst Forest -	900	900
			Acres - -	122,622	38,015
Lands in Kent, Gloucester, Derby, Durham, &c., belonging to the crown, enclosed and planted with oak - - -					6,612
Enclosures thrown open, and enclosed woods of spontaneous growth belonging to the crown, estimated at - - -					7,000
Lands in New, Dean, and Woolmer Forests that *may be* planted -					11,000
			Total - -		62,627

We have extracted this statement from the *Fourth Report* (p. 27.) *of the Commissioners of Woods and Forests.* The Commissioners state that this is the utmost extent of land likely to be obtained from the royal forests, or from the crown estates, which it would be desirable to retain for the growth of timber. But, in order to provide a still more ample supply of oak for the use of the navy, the Commissioners recommended the purchase of such woodlands, or of such land suitable for the growth of oak, as might adjoin those royal forests which had establishments of officers, &c., adequate to undertake the management of the new grounds without additional expense to the public: but this recommendation has not been acted upon to any great extent. The best thing that could be done, for the preservation of the timber now in the country, would be to reduce, or rather abolish, the existing duties on foreign timber and foreign oak bark.

Scotland. — There can be no manner of doubt that, in ancient times, Scotland was a well-wooded country. This is proved by the remains or the trees found in the mosses in all parts of the kingdom, and by various other circumstances. But, excepting some Highland counties, the old woods were, long since, all but totally destroyed; and it was not till the early part of last century that they began to be replaced by modern plantations. The remarks of Dr. Johnson on the want of wood in Scotland, are believed by many to have given a considerable spur to planting. We doubt, however, whether such were really the case. But, about the time of his visit, Scotland was beginning rapidly to improve. Many mansions were soon after constructed in different parts of the country, which required woods for protection and embellishment; and, as the wealth of the proprietors increased, the beautifying of their estates, and their improval by means of planting, attracted more and more of their attention. Hence, during the last half century, many very large additions have been made to the plantations of Scotland. The total extent of woodland in that country was estimated, in the *General Report of Scotland* (vol. ii. p. 321.), at 913,695 English acres, of which 501,469 were natural woods, and 412,226 plantations. If this estimate may be relied on, the total woodland cannot, at this moment, be less than from 950,000 to 1,000,000 acres. But, notwithstanding this vast extent of wood, there are many extensive tracts in which hardly a tree is to be seen. This is owing to the want of hedge-rows, for which generally the country is not suitable, and to the wood being mostly in large masses. — (*Ante*, p. 234.) The largest and most valuable woods are in Perthshire, Aberdeenshire, Ross-shire, and Inverness-shire. The late Duke of Athol was the greatest planter of his time in the empire: he planted about 15,000 statute acres.

Ireland. — Though now comparatively destitute of timber, Ireland was formerly very thickly wooded. Very large trees are still dug up in most of the bogs; and the timber so obtained forms, in some counties, all that is made use of by the natives.* The black bogs abound with oak timber, the red ones with fir, and in all of them there are yew and holly. Giraldus Cambrensis, who came into Ireland on its invasion by Henry II., in 1171, represents it as overrun with woods. Boate, who refers to this statement, adds that the English, being settled in the country, exerted themselves to diminish the woods wherever they were masters, partly to deprive thieves and other banditti of safe and convenient hiding-places, and partly to increase the supply of cultivable lands. — (*Ireland's Natural History*, p. 119.) But long after this period Ireland could boast of very large and valuable forests. Spenser, in his panegyric on the country, says that it is "abundantly adorned with goodly woods, even fit for building of houses and ships; so commodiously, that if some princes in the world had them, they would soon hope to be lords of all the seas, and ere long of all the world." † In 1652, when Boate's *Natural History of Ireland* was published, there were many very extensive woods in the country, particularly in Wicklow, King's and Queen's Counties, and in Wexford, Carlow, Donegal, Fermanagh, Antrim, Down, Kerry, Tipperary, &c. (p. 123.); and the facts collected by Mr. Wakefield prove that these were far from having entirely disappeared in the early part of the last century. — (*Account of Ireland*, vol. i. p. 530.)

Many causes conspired to occasion the totol destruction of the woods of Ireland. Of these the principal, perhaps, is to be found in the violent changes of property in that country down to the accession of Queen Anne, which, by generating a strong sense of uncertainty, stimulated the holders of estates to make the most of them while they were under their control, at the same time that it made them abstain from undertaking any scheme of improvement that was either expensive or but remotely productive. While, therefore, there was, on the one hand, little or no motive to plant new woods, or to protect the old from depredations, there was, on the other, a considerable temptation to cut them down. The quantity of tillage land was thus, in some instances, considerably increased: and in the seventeenth and eighteenth centuries, when iron was largely produced in Ireland, the demand for wood for the furnaces made it bring a high price, and occasioned the destruction of extensive forests. — (*Wakefield*, vol. i. p. 528.) The disorderly state of Ireland was also, in the seventeenth and eighteenth centuries, as it had been in the twelfth, a prominent cause of the ruin of the woods. "By an order remaining in the council books of the 2d of November, 1654, Commissary General Reynolds was directed to fell and carry away as many trees which, the order says, were dangerous shelter for rogues, and obstructed the highway, so as to enlarge the road 20 yards on each side, which was executed accordingly." (*Smith's Natural Hist. of Waterford*, p. 92.) From the combined influence of these and other causes, Ireland has been wholly stripped of forests, and almost of trees. Spenser's "goodly woods" are now no where to be found. "A traveller in Ireland finds timber, as he does shrubs and exotic plants, merely as appendages to a gentleman's place of residence; and, after leaving a favoured spot of this kind, he at once loses sight of green foliage, so agreeable to the eye, and enters dreary wastes, where there is scarcely a twig sufficient to form a resting-place to the birds fatigued witht heir flight. To so great an extent does this evil exist, that I have seen the remains of those who were gone 'to that bourne whence no traveller returns' wrapped up in mats, for want of a coffin, and in that state deposited in the earth. To a circumstance of this kind I was myself a witness during the summer of 1809, and Lord Enniskillen informed me that the same practice is common throughout the county Cavan." — (*Wakefield*, vol. i. p. 531.)

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* M'Evoy's *Survey of Tyrone*, p. 188.

† *Spenser's Works*, Lond. 1715, p. 1526.

At present, timber is more abundant in Fermanagh than in any other county of Ireland. Oak is found in the glens of Wicklow, but not of such a size as to be of much use. Lord Oriel (Mr. Foster) has been one of the most successful and extensive of the Irish planters. Mr. Tighe states, that there are 1,800 acres of wood in Kilkenny: and, according to Mr. Dutton, there are about 780 acres of wood in Clare.

SECT. IX. *Distribution of Lands, Rents, Profits of Farmers, &c.*

Quantity and Value of Agricultural Produce, &c. — It would be exceedingly desirable to be possessed of really authentic information on these important topics, and we have to regret that such is not within our reach. It could not be acquired without much trouble and expense, and the continued co-operation either of government or of numerous individuals. But neither the government nor the people of England has ever given any considerable encouragement to statistical inquiries; and, notwithstanding the heavy expense that is annually incurred in preparing parliamentary reports and accounts connected with statistics, it is still true that the elements of the science are as little understood here as in almost any other country. No effectual means have ever been set on foot for getting accounts of the extent of land in tillage and in pasture, and of the proportion which one sort of crop bears to another, or of the numbers and value of the different breeds of cattle, horses, &c. In reasoning on these subjects, we have, therefore, nothing but the researches of a few meritorious individuals and analogies to trust to. Under such circumstances, precision is not to be expected: a rough average is all that can be looked for. We begin with —

I. England.

Number of Acres in Tillage.—According to the tables laid before the Emigration Committee by Mr. Couling, the arable and pasture land of England and Wales, exclusive of wastes, forests, roads, rivers, &c., amounts to 28,749,000 acres; of this sum he supposes the arable land and gardens to amount to 11,143,370 acres, leaving 17,605,630 acres as meadows, pastures, and marches. We suspect, however, that Mr. Couling has rather underrated the proportion of the arable and garden ground to the pasture. In his "*Eastern Tour,*" Arthur Young estimates the extent of land under crop in England, exclusive of Wales, at 12,707,000 acres. — (Vol. iv. p. 458.) But as upwards of 1,200,000 acres would have to be added to this estimate for fallows, it is certainly too high. Dr. Beeke's estimate does not differ materially from that of Mr. Couling — (*Observations, &c.*, p. 31.); but there can be no doubt that the proportion of tillage to pasture land has increased considerably since 1800, when Dr. Beeke's pamphlet was published. In 1812, Mr. Stevenson estimated the arable land at 11,500,000 acres; and we believe we shall not be far wrong in supposing it to be, at this moment, 12,000,000 acres.

Distribution of Tillage Land.—According to Mr. Middleton, the tillage land of England and Wales, supposing it to amount to 12,000,000 acres, would be appropriated as follows: —

	Acres.		Acres.
Wheat	3,300,000	Roots	1,200,000
Oats and beans	3,000,000	Clover	1,200,000
Barley and rye	900,000	Fallows	2,400,000
		Total	12,000,00*

Mr. Comber, in an estimate framed, apparently, with considerable care in 1812, supposes the total acres under cultivation in England and Wales to amount to 11,591,000, which he distributes as follows: —

	Acres.		Acres.
Wheat	3,160,000	Hop-grounds	36,000
Barley and rye	861,000	Nursery-gardens	9,000
Oats and beans	2,872,000	Fruit and kitchen-gardens cultivated by spade	41,000
Clover, rye-grass, &c.	1,149,000	Pleasure-grounds	16,000
Roots and cabbages cultivated by plough	1,150,000		
Fallow	2,297,000	Total	11,591,000†

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* *Survey of Middlesex*, 2d ed. p. 640.

† *Comber on National Subsistence*, Appen. p. 52.

We believe that in both these estimates, the extent of ground under wheat is underrated, while that under fallow is considerably overrated. Supposing 12,000,000 acres to be under cultivation, we incline to think that their distribution is nearly as follows: —

	Acres.		Acres.
Wheat - - - -	3,800,000	Roots, *turnips*, *potatoes*, &c.	1,200,000
Barley and rye - - -	900,000	Hops, gardens of all sorts, &c.	150,000
Oats and beans - -	3,000,000	Fallow - - - -	1,650,000
Clover - - -	1,300,000		
			Total-12,000,000

Quantity and Value of Crops.—We have given in a previous table (p. 476.) an account, deduced from the Agricultural Reports published by the Board of Agriculture, of the average productiveness of the different species of crops in the different counties of Great Britain. From this it appears that the produce of wheat throughout England and Wales may be taken, at an average, at from 2½ to 3 quarters (Winch. measure) per acre; barley at 4 quarters per do.; oats at 4½; peas 2½; beans 3¼; and potatoes at 250 bushels. We have, however, been assured, that the wheat culture has been since so much improved by the introduction of bone manure and otherwise, that, making due allowance for the greater quantities produced in the best wheat counties, as Kent and Essex, the average produce may be safely reckoned at 3¼ quarters an acre; and taking these results, and the average prices of the last three or four years, we get the quantity and value of the principal crops, as follows: —

Crops.	Acres.	Prod. per Acre. Quarters.	Total Produce Quarters.	Price per Quarter.	Value.
Wheat - -	3,800,000	3¼	12,350,000	50*s.*	£30,875,000
Barley and rye	900,000	4	3,600,000	30*s.*	5,400,000
Oats and beans	3,000,000	4½	13,500,000	25*s.*	16,875,000
Roots - -	1,200,000	5*l.* 5*s.* per acre.	- -	- -	13,125,000
Clover - -	1,300,000				
			29,450,000		£66,275,000

The oats and beans are here blended together, and reckoned at the price of oats, whereas beans are about 10*s.* a quarter higher. Allowing for this, the two may be worth together 17,500,000*l.* The grounds occupied as gardens, hop plantations, &c., may produce, at an average, about 15*l.* an acre, or 2,250,000*l.* a year; making the total value of the different crops raised in England and Wales, 72,900,000*l.*

Produce of Grass Land.—This may be determined in two ways; either by ascertaining the quantity and value of the different articles annually produced, or by taking a general rough average value per acre. The former would be the most satisfactory mode; but the details are too numerous and too loose to admit of their being brought forward with much confidence. We believe, however, that the annual value of the various products derived from pasture land may be estimated, at an average, at about 3*l.* 10*s.* an acre; being equivalent, on 17,000,000 acres, to 59,500,000*l.*

This sum of 59,500,000*l.* consists, probably, of the following items: —

Cattle, 1,100,000, at 13*l.* each	£ 14,300,000
Calves, 200,000, at 3*l.* each	600,000
Sheep and lambs 6,800,000, at 1*l.* 10*s.* each	10,200,000
Wool (exclusive of slaughtered sheep) 338,000 packs, at 12*l.* each	4,056,000
Hogs and pigs 555,000, at 1*l.* 16*s.*	1,000,000
Horses 200,000, full-grown, annually produced at 15*l.* each	3,000,000
Poultry, eggs, rabbits, deer, &c.	1,344,000
Meadow and grass for work and pleasure horses	13,000,000
Dairy produce, or milk, butter, and cheese	12,000,000
	£ 59,500,000

The total annual value of the agricultural produce of England and Wales, exclusive of wood, &c., may, therefore, be estimated at about 132,500,000*l.* (72,900,000*l.*+59,500,000*l.*) In further corroboration of this estimate, we may remark, that Arthur Young, in the Agricultural Report of Essex, estimates the value of the farm produce of England at 145,800,000*l.* Mr. Middleton, in the Survey of Middlesex, estimates it at 126,690,000*l.*; and one of the latest and best authorities, Mr. Stevenson, in the article "England," in the Edinburgh Encyclopædia, estimates it at 131,066,000*l.*, exclusive of the value of numerous gardens, orchards, &c. Though agreeing so closely in the result with the above estimates, the one we have now laid before the reader differs widely from them in many of the details. But we flatter ourselves that the advantage of superior accuracy is on our side; and though we may be mistaken on some points, and it is hardly possible in any case to arrive at any thing better than a rough approximation, we do not believe that, with the assumed prices, we can be more than a very few millions on either side the mark.

Rental of England and Wales. — There are, unfortunately, no means by which either the total amount of the rent of the country, or the proportion which the rent bears to the total produce of agricultural industry, can be correctly estimated. Mr. Wood, Chairman of the Board of Stamps and Taxes, has, however, obligingly enabled us to lay before the reader a more authentic estimate of the rental of England and Wales than any hitherto published*; by supplying us with returns of the rental of each county, and the sums assessed on the occupiers, as ascertained by the Property Tax Commissioners in 1810 and 1811, 1812 and 1813, and in 1814 and 1815. From those returns, and those of the number of acres in each county, according to their aggregate measurement, we have drawn up the following table.

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* Had the papers relating to the Property Tax been preserved, they would have supplied a vast deal of authentic information, not only with respect to rent, but with respect to the numbers and incomes of the different ranks and orders of the community. The voluntary destruction of so great a storehouse of curious information, is an act of which it is difficult to say whether its folly or its barbarism be the more prominent feature. It has no parrallel, unless it be the burning of the Alexandrian Library.

TABLE showing the Aggregate Measurement of each county of England and Wales; the ascertained Rentals of each, exclusive of Houses, Mines, Minerals, Fisheries, &c.; according to the Returns under the Property Tax Act for the Years 1810-1811, and 1814-1815; with the Average Annual Rent per Acre of the Land of each County at these respective Periods, and the Sums estimated as Profits of the Farmers in the Year 1810-1811.

Counties.	Acres.	Estimated Rental for 1810-1811.	Rent per Acre in 1810-1811.	Estimated Rental for 1814-1815.	Rent per Acre in 1814-1815.	Estimated Profits of Occupiers, 1810-1811.*
ENGLAND.		£.	£ s. d.	£.	£ s. d.	£.
Bedford -	296,320	279,976	0 18 10¾	316,595	1 1 4½	204,466
Berks - -	481,280	407,187	0 16 11	502,096	1 0 10½	303,863
Bucks - -	472,320	497,158	1 1 0½	548,630	1 3 2¼	374,009
Cambridge -	548,480	457,732	0 16 8¼	541,325	0 19 8¾	339,912
Chester - -	673,280	689,731	1 0 6	805,141	1 3 11	507,648
Cornwall - -	851,200	564,607	0 13 3¾	629,259	0 14 9½	424,855
Cumberland -	974,720	469,250	0 9 7½	561,468	0 11 6¼	351,938
Derby - - -	657,920	619,472	0 18 10	707,250	1 1 5¾	466,271
Devon - - -	1,654,400	1,217,529	0 14 8¾	1,360,812	0 16 5½	913,160
Dorset - - -	643,840	489,004	0 15 2¼	564,377	0 17 6¼	366,769
Durham - -	702,080	505,387	0 14 4¾	543,411	0 15 5¾	379,547
Essex - - -	981,120	904,894	0 18 5½	1,109,829	1 2 7½	678,461
Gloucester -	805,120	805,390	1 0 0	971,410	1 4 1½	603,850
Hereford - -	552,320	441,343	0 15 11¾	524,781	0 19 0	340,205
Hertford - -	403,200	342,056	0 16 11½	397,539	0 19 8½	256,763
Huntingdon -	238,080	202,076	0 16 11½	277,463	1 3 3¾	151,557
Kent - - -	996,480	864,294	0 17 4¼	961,368	0 19 3½	651,142
Lancaster - -	1,130,240	1,270,345	1 1 5¾	1,463,183	1 5 10½	952,759
Leicester - -	515,840	699,158	1 7 1¼	807,558	1 11 3¾	526,802
Lincoln - -	1,671,040	1,572,756	0 18 10	1,865,086	1 2 4	1,186,456
Middlesex -	180,480	346,634	1 18 5	517,669	2 17 4½	261,857
Monmouth -	317,440	202,211	0 12 9	231,113	0 14 6¾	152,682
Norfolk - -	1,295,360	921,581	0 14 2¾	1,102,352	0 17 0¼	698,882
Northampton -	650,240	695,691	1 1 4¾	846,172	1 6 0¼	522,478
Northumberland	1,197,440	909,997	0 15 2¼	999,951	0 16 8½	680,093
Nottingham -	535,680	534,678	0 19 11½	604,220	1 2 6½	401,244
Oxford - -	483,840	498,086	1 0 7	589,594	1 4 4½	373,219
Rutland -	95,360	99,149	1 0 9½	123,296	1 5 10¼	74,381
Salop - -	859,520	730,099	0 16 11¾	823,845	0 19 2	553,871
Somerset - -	1,052,800	1,353,282	1 5 8½	1,491,734	1 8 4	1,016,331
Southampton -	1,040,000	593,259	0 11 5	707,127	0 13 7¼	445,515
Stafford - -	757,760	757,678	1 0 0	862,973	1 2 9¼	567,476
Suffolk - -	969,600	694,078	0 14 3¾	826,228	0 17 0½	520,559
Surrey - -	485,760	368,457	0 15 2	437,958	0 18 0¼	277,430
Sussex - -	938,240	567,712	0 12 1¼	641,736	0 13 8	412,463
Warwick -	574,080	651,306	1 2 8¼	838,993	1 9 2¾	483,855
Westmoreland -	487,680	220,596	0 9 0½	260,945	0 10 8½	166,167
Wilts - -	874,880	812,292	0 18 6¾	964,611	1 2 0	607,971
Worcester -	462,720	516,203	1 2 3¾	609,746	1 6 4¼	387,152
York - - -	3,735,040	3,107,751	0 16 7¾	3,563,980	0 19 1	2,333,714
Totals for Engl.	32,243,200	27,880,085		32,502,824		20,917,773
Average rent per statute acre of England.	- -	- -	0 17 3½	- -	1 0 2	

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* Under the Property Tax Act the profits, or clear taxable incomes, of the occupiers of land in England and Wales were estimated at *three fourths*, and in Scotland at *one half* the rent, or annual value of their farms; and they were assessed accordingly.

Table showing the Aggregate Measurement, &c. — *continued.*

Counties.	Acres.	Estimated Rental for 1810-1811.	Rent per Acre in 1810-1811.	Estimated Rental for 1814-1815.	Rent per Acre in 1814-1815.	Estimated Profits of Occupiers, 1810-1811.
WALES.		£.	£ s. d.	£.	£ s. d.	£.
Anglesea -	173,440	65,121	0 7 6	76,105	0 8 9¼	48,842
Brecon - -	482,560	124,244	0 5 1¾	135,191	0 5 7¼	81,335
Cardigan -	432,000	101,510	0 4 8½	126,399	0 5 10¼	79,163
Caermarthen -	623,360	224,153	0 7 2¼	240,714	0 7 8¾	168,115
Caernarvon -	348,160	90,848	0 5 2½	105,852	0 6 1	68,136
Denbigh -	405,120	183,787	0 9 0¼	224,678	0 11 1	137,006
Flint - -	156,160	118,615	0 15 2¼	139,753	0 17 10	88,961
Glamorgan -	506,880	212,079	0 8 4½	229,013	0 9 0¾	158,070
Merioneth -	424,320	83,451	0 3 11	96,343	0 4 6½	62,589
Montgomery -	536,960	173,292	0 6 5½	181,881	0 6 9¼	114,006
Pembroke -	390,400	160,617	0 8 2¾	181,057	0 9 3	120,463
Radnor -	272,640	85,268	0 6 3	90,652	0 6 7¼	61,688
Totals for Wales	4,752,000	1,622,985		1,827,638		1,188,374
Average rent per statute acre of Wales -	- -	- -	0 6 10	- -	0 7 8¼	
Add for England, as before	32,243,200	27,880,085		32,502,824		20,917,773
Totals for England and Wales	26,995,200	29,503,070		34,330,462		22,106,147
Average rent per statute acre of England and Wales -	- -	- -	0 15 11¼	- -	0 18 6¾	1,188,374

It may be said that this table does not exhibit the present rental of the kingdom; and this, no doubt, is true. But we are well assured that those who suppose it is about the same now as in 1810-11, will not be far from the mark. In some parts the fall of rents since 1815 has been greater than their rise during the previous five years; but in other parts rents are higher at this moment than they have ever previously been. The fall of prices has been counteracted in many districts by extensive improvements, particularly in the drainage and better management of land, the opening of new and improved channels of communication, &c.; so that, on the whole, we may be pretty certain we are committing no great error in assuming that the rent of England and Wales in 1838 is nearly the same as in 1810-11 in other words, that its total amount is about 29,500,000*l.*, being at the rate of 15*s.* 11¼*d.* an acre for the entire kingdom, or 17*s.* 3¼*d.* an acre for England, and 6*s.* 10*d.* an acre for Wales.

There is a very considerable difference in the rents of equally fertile land in different counties; occasioned partly by the different amount of the public burdens, partly by differences of situation, and partly by the different degrees of skill and economy with which they are farmed. Rents of corn farms are highest in Northumberland, Durham, and part of Yorkshire; and in Essex, Kent, Hampshire, &c. A great deal of arable land, even of a moderately good quality, lets at from 10*s*. to 15*s*. an acre; and where highest, its rent, exclusive of tithes, poor rates, and other public burdens, seldom exceeds 25*s*. an acre, unless where it enjoys some peculiar advantages. Good pasture land generally lets higher than corn land. It may vary from 16*s*. to 3*l*. When it is of limited extent, and contiguous to a considerable town, it sometimes fetches 5*l*. and 6*l*. per acre, and some more.

Rise of Rents in England.—The Board of Agriculture concluded, from communications made to it, that rents had risen in England from 1791 to 1804, at an average, 39 per cent.; but we incline to think that this is an exaggerated statement. But, supposing it to be accurate, their subsequent rise, allowing for the fall since the peace, cannot be estimated at more than from 10 to 12 per cent.; making the total rise since 1790, 50 cent. This conclusion may be still farther corroborated, as follows:—

Arthur Young, in his *Northern Tour* (vol. iv. p. 366.), estimated the rental of England and Wales, in 1771, at 16,000,000*l*. In Dr. Beeke's celebrated pamphlet on the *Income Tax*, published in 1800, the rental is estimated at 20,000,000*l*.; which is supposed to have been very near the real rental at that period; and, admitting these estimates to be tolerably correct, it is seen, from the previous statements, that the increase of rent since 1800 has been very decidedly greater than its increase during the preceding 30 years.

Moderate Rent of Land in England.—Considering the advantages which the English farmer enjoys in fertility of soil, climate, and ready access to the best markets in the world, the rent which he pays seems to be unusually low. This, no doubt, is owing, partly to the pressure of the public burdens falling on the tenant; partly (at least in the south) to vicious customs with respect to the succession of tenants, and the waste of labour in ploughing; and partly to the want of leases and the consequent insecurity of the occupiers. A good deal is, however, to be ascribed to a disinclination on the part of many landlords to raise rents, and a wish not to remove tenants, and to keep their estates always underrented. But though the disadvantages resulting from the overrenting of land be great and signal, the opposite practice, or its underrenting, is by no means the best that may be devised. Supposing that a tenant has a lease of a farm, or that he is otherwise secured in its possession, it might be imagined that the circumstance of its being underrented would have no influence in diminishing his industry or activity, seeing that he would reap all the advantage of superior skill, enterprise, and economy: but experience shows that such is not by any means the case. To make farmers leave those routine practices to which they are strongly attached, and avail themselves of improved systems and modes of management, they must not only have the means of meliorating their condition, but their rents must be such as to impress them with a conviction that if they do not exert themselves, their ruin will assuredly follow. Estates that are underrented are, uniformly almost, farmed in a very inferior style to those that are let at their fair value; and the tenants are comparatively poor. An increase of rent, provided it be not pushed too far, is of all others the most efficient means of improvement. "I have not," says Mr. Young, "seen an instance of rent being low, and husbandry, at the same time, being good. Innumerable are the instances of farmers living miserably, and even breaking, on farms at very low rents, being succeeded by others, on the same land, at very high rents, who make fortunes. Throughout my journey I have universally observed that such farms as were the most wretchedly managed, were very much underlet."*

A striking illustration of the same principle is given by Davis, in the *Survey of South Wales:* — "A gentleman noted for his liberality to his tenants, during the last 17 years of his life laid out upwards of 20,000*l.* in improving the farms of his tenants at will, without charging them a penny in advance of rent. He died; and his successor, of a different cast, leaving off improvements, tried what *doubling of rents* would do; and it is painful to relate, for it borders on a libel on human nature, that this advance of rent, considered exceedingly grievous at the time it was imposed, had a greater effect in improving the agriculture of the estate, than all the benevolence and forbearance of his predecessor. The tenants were now compelled to do for themselves what another did for them before."—(Vol. i. p. 165.)

Proportion of Rent of Land to the Produce.—It is sufficiently obvious that, in estimating this proportion, it is not possible to do more than arrive at a rough average, which will very rarely apply in particular instances. The cultivation of inferior being quite as expensive as that of superior land, and, in most cases, a good deal more so, it follows, that, while the whole, or the greater part of the produce of bad land, may be required to indemnify the cultivator, so that little or nothing may remain for the landlord, a comparatively small portion of the produce of superior land may suffice to repay the cultivator for his outlay and trouble, leaving a large surplus to the landlord. Rents do not, however, depend entirely on the differences in the natural fertility of the soils under cultivation, but are materially influenced by the degree in which they have been improved; the nature and duration of the leases under which they are held; the public burdens affecting them, &c. With respect, indeed, to the influence of the latter on rent, it is difficult to form any precise conclusions, without previously knowing the mode in which they are assessed, and their effect on prices. In general, however, there can be no doubt that the imposition of taxes on the land, or on the produce of the land, tends to lower rent, and that their withdrawal tends to raise it. But the extent to which tillage has been carried, and the different degrees of improvement, are the principal circumstances that affect rent. A farm of naturally bad land, if it be furnished with commodious buildings, and be otherwise highly improved and fertilised by an expenditure of capital and labour, may yield a pretty considerable amount of rent; while a farm of really good land, but furnished with indifferent buildings, and but little improved, may probably not let for so much as the other. Agricultural science has, also, a very considerable influence over rent. The greater the economy with which the business of Agriculture is carried on, that is, the smaller the outlay for which the different farming operations may be completed in the best manner, the greater will be the amount of surplus produce after the claims of the farmer are satisfied. It is in this respect, in the greater skill and economy with which agricultural operations are carried on, more than in the absence of tithes and poor rates,—though these have, of course, a considerable influence,—that the superiority of Scotch over English agriculture mainly consists, and that, at an average, the Scotch landlords receive a considerably greater proportion of the produce of the soil than the English.

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* *Young's Tour in the North of England,* vol. iv. p. 376. See also *Analysis of the Statistical Account of Scotland,* part i. p. 258., &c.

These statements show how very difficult it must be to form any tolerably accurate estimate of the share of the agricultural produce of an extensive country that goes to the landlord; and they also show how inapplicable such an average proportion would be, even if accurately determined, to the vast majority of particular farms, and even to very many districts of considerable extent. It is pretty evident, too, that though the proportion which the produce of a country going to the landlords as rent at any particular period were ascertained, it might be materially different at another period. It is, as has been seen, materially influenced, not only by the skill with which agricultural operations are carried on, and by the magnitude and nature of the public burdens laid on the land, but by the extent to which the cultivation of bad land is carried, and by a variety of other circumstances, that, like those now mentioned, are liable to perpetual change, and operate in different directions.

Towards the middle of last century it seems to have been the common opinion, that the rent of land of medium fertility was about equivalent to a third part of its gross produce. During the present century, however, those best able to judge believe that this proportion is too high, and that the medium rent of land does not amount to more than between a fourth and a fifth part of its produce; but we suspect that the former estimate must have been at all times a great deal above the mark. Even for the finest land a third part of the produce would be a very heavy rent; and for lands of medium and inferior fertility it would be quite oppressive. Those who set aside a fifth part of the produce of Great Britain as rent, seem to us to make an allowance which, if any thing, is too high.

The following table has been given, as representing the average rent of cultivated land in Scotland; but its accuracy has been disputed, and at best it can be considered as nothing better than a rough, rude outline: —

						Per Acre.
Land producing	£10 18s.	per acre	-	$\frac{1}{3}$ part,	or	£3 11s.
Land, -	6 12s.	per ditto	-	$\frac{1}{4}$ -	or	1 13s.
Land, -	4 5s.	per ditto	-	$\frac{1}{5}$ -	or	0 17s.

Proportion of the Gross to the Real Rent of Land. — By the gross rent of land is meant, as every one knows, the entire sum paid by the occupier to the owner, including, of course, an allowance for the houses on the farm subservient to agricultural purposes, and for the fences, roads, drains, and improvements of all sorts that have been made upon the land. The *real* rent is much more limited: it means that portion of the gross rent which may be supposed to be paid by the occupier to the landlord for the use of *the natural and inherent powers of the soil*, or the rent the farm would fetch supposing it were in a state of nature, and destitute of houses, fences, and of every sort of artificial melioration. It is impossible, however, to distinguish between these portions. Most improvements, when once effected, become so intimately blended with the soil, that they cannot be separately considered; nor, supposing they were requested to make the attempt, would any two agriculturists, however skilful, form the same estimate of the real rent of an improved farm. But it is, notwithstanding, obvious that a very large portion of the rent of Great Britain consists, in fact, of a compensation, or return, for the vast amount of capital expended on agricultural buildings and improvements. It is to be regretted that we have no means of forming any estimate, which shall have any pretensions to accuracy, of what the portion of rent accruing to the landlords on account of improvements may really amount to. We believe, however, that it is decidedly greater than the other; but, estimating the whole rental of Great Britain at *thirty-four* millions, if we set apart *seventeen* millions as real rent, and regard the remaining *seventeen* millions as interest on account of buildings, fences, drains, roads, and other improvements of the soil, we shall certainly be within the mark.

Distribution of Rent in England. — Landed property in England is not so unequally distributed as many suppose. The highest rental may amount to about 100,000*l.* a year; but there are comparatively few estates worth more than 10,000*l.* or 12,000*l.*, and the great majority are under 1,000*l.* We regret, however, that there are no means either of classifying the incomes derived from land, or of estimating the total number of proprietors amongst whom it is divided. Dr. Beeke says that the latter amount to at least 200,000 — (*Observations on the Income Tax*, 2d ed. p. 21.), which would give, at an average, 150*l.* a year to each. In the agricultural counties, the smaller proprietors are understood to have become less numerous during the present century; but in the manufacturing districts the reverse is true, and large estates have become comparatively rare.

Agricultural Capital — Great Britain. — The capital employed in farming has been very differently estimated. It was supposed by Arthur Young, in his *Tour*, to amount to about 4*l.* an acre, which, taking the cultivated land of England and Wales at 31,000,000 acres, would give an aggregate sum of 124,000,000*l.* It is generally believed that this estimate was at the time pretty accurate; but, owing to the general rise of prices, and to the great improvements that have been made in the stock and implements employed in most farms, the amount of capital engaged in agriculture must be much greater at present than in 1770; and cannot, we are assured, be estimated at less, at an average, than 6*l.* or 7*l.* per acre; giving the total sum of 186,000,000*l.*, or 217,000,000*l.* The capital required for farming the 5,000,000 arable acres in Scotland may be estimated at 5*l.* or 6*l.* an acre.

Insufficiency of Agricultural Capital. — It is a remark, as old as the days of Columella, that a farmer's capital should be above rather than below his farm. But it may notwithstanding be affirmed that, speaking generally, farms in all parts of Britain are decidedly understocked. This is a point as to which, more than any other, farmers are apt to miscalculate. Those who should only take a farm of 100*l.* or 150*l.* a year, not unfrequently take one of 200*l.* or 300*l.* They are led to do this by the greater consequence attached to the occupancy of a considerable farm, by associating in their minds the idea that *much land will bring them much profit;* and by an over sanguine expectation that they will be able, by superior address, or by the assistance of friends, to make the capital answer the demands upon it. But such conduct is, for the most part, very short-sighted. A deficiency of capital disables farmers from procuring the best sort of implements; from performing the different operations in the best and most expeditious manner; from executing improvements that are, perhaps, indispensable; and most commonly ends by involving them in debt and difficulties, from which it may not afterwards be in their power to escape. "There is not, in the whole range of rural economy, a more important object than the country being richly stocked. The best land is of no avail without a sufficient sum of money to render its fertility of use: neither skill nor industry will make any amends for the want of an ample stock. One of the most common and yet most fatal errors, to which the conduct of a farmer is open, is that of understocking." — (*Young's Northern Tour*, vol. iv. p. 272.)

Profit of Farmers. — It appears from the previous table (p. 534.) deduced from the official returns, that the profits arising from farming in England and Wales, in 1810-11 amounted to about 22,000,000*l.* It has been contended that they have fallen since 1814 in a greater degree than rent; but this is problematical, and at all events they may now be safely estimated at about 21,000,000*l.* This would give, on a capital of 186,000,000*l.*, a gross profit of about 11¼ per cent., and on a capital of 217,000,000*l.*, it would give nearly 10 per cent. It is, however, to be observed, that this 21,000,000*l.* of gross profit includes, besides the return to the capital possessed by the agriculturists, *all that they receive as wages*, or on account of their labour in superintending and working on their lands. When a fair allowance is made on this account, it will be seen that the *nett* profit realised by the occupiers is but of very limited amount. In this respect, indeed, farmers seem to be less favourably situated than most other classes. Even with the greatest care and attention, few amongst them attain to opulence. The great majority merely manage to live respectably, and to bring up a family. "The few," says Mr. Loudon, "who do more than this will be found to have had leases at low rents, indulgent landlords, to have profited by the accidental rises in the market or depreciation of currency, or to have become dealers in corn or cattle; and rarely indeed to have realised aught by the mere good culture of a farm." — (*Ency. of Agriculture*, p. 719.) The opinion of Mr. Burke, who, in the estimation of those most capable of judging, stood high both as a scientific and practical farmer, is to the same effect. "In most parts of England," says he, "which have fallen within my observation, I have rarely known a farmer (I speak of those who occupy from 150 to 300 or 400 acres) who to his own trade has not added some other employment or traffic, that, after a course of the most unremitting parsimony and labour (such for the most part is theirs), and persevering in his business for a long course of years, died worth more than paid his debts, leaving his posterity to continue in nearly the same equal conflict between industry and want, in which the last predecessor, and a long line of predecessors before him, lived and died." — (*Thoughts and Details on Scarcity*, p. 21.)

II. Scotland.

Cultivated and Uncultivated Land. — Estimates are given in the *General Report of Scotland* (vol. i. pp. 37. 58, &c.) of the extent of the cultivated and uncultivated land, exclusive of lakes, in each county. There may have been errors in these estimates when they were drawn up; and a good deal of waste land has been brought into cultivation during the last 20 years. We have, however, been assured by those best able to judge on such subjects, that the estimates in question are more accurate than any others that have hitherto been put forth; and that, for most practical purposes, they may be held to be quite correct. We, therefore, have adopted them in the following table; and have added to it a column showing the extent of cultivated land in each county, supposing 1,000 to represent the total extent of such land in Scotland. (See Table, next page.)

Distribution of Land — Quantity and Value of Agricultural Produce. — This is a subject as to which the real information at our command is as limited in respect of Scotland as of the other divisions of the empire. According to the statistical tables in the *General Report of Scotland* (III. Append. p. 5.), the arable land is estimated at 5,043,450*l.* English acres. Of these the proportion in grass is estimated at 2,489,725, leaving 2,553,725 in tillage, which is supposed to be distributed as follows: —

	Acres.		Acres.
Wheat - - - -	140,095	Potatoes - -	80,000
Barley - -	280,193	Turnips - - - -	407,125
Oats - - - - -	1,260,352	Flax - - - - -	16,500
Rye - - - - -	500	Gardens - - - -	32,000
Beans and peas - -	118,000	Fallow - - -	218,050

But a large extent of waste land has been brought under cultivation during the last 20 years; and we are, also, satisfied, from the greatly increased consumption of wheaten bread in Scotland, and other circumstances, that the quantity of land assigned to the growth of wheat has increased both absolutely and relatively. In our view of the matter, the distribution of the land in tillage would be more correct, were it made as follows: —

	Acres.		Acres.
Wheat - - - - -	220,000	Turnips - - -	350,000
Barley - - - - -	280,000	Flax - - - - -	15,000
Oats - - - -	1,275,000	Gardens - - - -	32,000
Beans and peas - - -	100,000	Fallow - - - - -	150,000
Potatoes - -	130,000		
		Total	2,553,000

Assuming this distribution to be correct, the quantity and value of the crops will be as follows: —

Crops.	Acres.	Produce per Acre.	Total Produce.	Price per Quarter.	Value.
			Qrs.		£.
Wheat - - - -	220,000	3 qrs.	660,000	50*s.*	1,650,000
Barley - - - - -	280,000	3½	960,000	30	1,470,000
Oats - - - -	1,275,000	4½	5,737,500	25	7,171,875
Beans and peas - -	100,000				
Potatoes - - -	130,000	5*l.* 5*s.*	- -	- -	2,520,000
Turnips - - -	350,000				
Flax - - - - -	16,000	8*l.*	- -	- -	128,000
Gardens - - - -	32,000	13*l.*	- -	- -	416,000
Total -	-	-	- -	- -	13,355,875

TABLE of the Extent of Land (exclusive of Lakes) in the several Counties of Scotland, in Imperial Statute Acres, and in Scotch Acres, distinguishing the Number of Cultivated, and the Number of Uncultivated Acres in each; and showing the Proportion of Cultivated Land in each County, assuming 1,000 to represent the total Extent of Cultivated Land in Scotland.

Counties.	Imperial Statute Acres.			Scotch Acres.			Proportion of cultivated Land in each County, assuming 1,000 to be the Total cultivated Land in Scotland.
	Cultivated.	Not Cultivated.	Totals.	Cultivated.	Not Cultivated.	Totals.	
Aberdeen -	451,584	802,816	1,254,400	358,027	636,493	994,520	89·538,709
Argyle - -	163,970	1,244,030	1,408,000	130,000	986,298	1,116,298	32·511,475
Ayr - -	325,830	339,130	664,960	258,326	268,871	527,197	64·604,586
Banff - -	123,840	288,960	412,800	98,183	229,095	327,278	24·554,620
Berwick - -	137,197	145,683	282,880	108,772	115,502	224,274	27·203,006
Caithness -	92,333	347,347	439,680	73,204	275,386	348,590	18·307,508
Clackmannan	23,040	7,680	30,720	18,267	6,089	24,356	4·568,301
Cromarty -	20,480	143,360	163,840	16,237	113,659	129,896	4·060,712
Dunbarton -	53,990	91,930	145,920	42,805	72,884	115,689	10·704,974
Dumfries -	232,557	569,363	801,920	184,377	451,405	635,782	46·110,698
Edinburgh -	144,999	81,561	226,560	114,959	64,664	179,623	28·749,963
Elgin - -	121,088	181,632	302,720	96,002	144,002	240,004	24·008,962
Fife - -	209,216	89,664	298,880	165,872	71,088	236,960	41·482,715
Forfar(Angus)	369,408	198,912	568,320	292,876	157,702	450,578	73·245,100
Haddington	139,264	34,816	174,080	110,412	27,603	138,015	27·612,844
Inverness -	148,685	1,709,875	1,858,560	117,881	1,355,632	1,473,513	29·480,812
Kincardine -	92,416	150,784	243,200	73,270	119,545	192,815	18·323,965
Kinross - -	27,648	18,432	46,080	21,920	14,613	36,533	5·481,962
Kirkcudbright	168,243	357,517	525,760	133,387	283,448	416,835	33·358,713
Lanark - -	271,296	331,584	602,880	215,090	262,888	477,978	53·791,750
Linlithgow -	57,600	19,200	76,800	45,667	15,222	60,889	11·420,754
Nairn - -	37,440	87,360	124,800	29,683	69,261	98,944	7·423,490
Peebles - -	24,500	179,660	204,160	19,424	142,439	161,863	4·857,786
Perth - -	530,022	1,126,298	1,656,320	420,215	892,957	1,313,172	105·091,158
Renfrew - -	72,000	72,000	144,000	57,083	57,083	114,166	14·275,942
Ross - -	120,378	1,203,782	1,324,160	95,439	954,388	1,049,827	40·829,194
Roxburgh -	205,920	251,680	457,600	163,258	199,539	362,797	23·868,185
Selkirk - -	10,100	158,220	168,320	8,008	125,440	133,448	2·002,597
Stirling - -	195,600	117,360	312,960	155,076	93,046	248,122	38·782,976
Sutherland -	63,045	1,059,515	1,122,560	49,984	840,009	889,993	12·500,372
Wigtown -	101,136	187,824	288,960	80,183	148,912	829,095	20·052,940
Total of main-land - -	4,734,825	11,597,975	16,332,800	3,753,887	9,195,163	12,949,050	938·806,769
Islands:							
Hebrides, viz.							
Bute and its Isles -	29,440	73,600	103,040	23,341	58,352	81,693	5·837,274
Argyle Isles	107,020	487,540	594,560	84,848	386,534	471,382	21·219,602
Inverness Is.	95,680	640,320	736,000	75,857	507,662	583,519	18·971,141
Ross and Cromarty	30,117	328,283	358,400	23,877	260,271	284,148	5·971,508
Orkney Is.	24,480	247,520	272,000	19,409	196,242	215,651	4·853,820
Shetland Is.	21,888	525,312	547,200	17,353	416,485	433,838	4·339,886
Totals -	5,043,450	13,900,550	18,944,000	3,998,572	11,020,709	15,019,281	1,000·000,000

The average value per acre of the pasture land of Scotland is estimated in the General Report at 2*l.*; but we have been assured by competent judges that it may be taken as high as 3*l.*; and on this hypothesis, the produce of 2,489,725 acres of pasture will be 7,469,175*l.* a year. But to this has to be added the produce of about 14,000,00 acres of mountain pasture, wood-land, and waste-land; which, taken at the average value of 3*s.* an acre, is 2,100,000*l.* Hence the total annual value of the land produce in Scotland will be, —

Value of crops and gardens - - - - -	£18,855,375
of pasture land - - - - - - - -	7,469,125
of uncultivated land and wood - - - - -	2,100,000
Total -	£22,925,000

Rental of Scotland. — We have found it more difficult to obtain accurate information as to the rental of Scotland than of England. Mr. Wood could only supply us with an account of its aggregate rental from the Property Tax Returns. There is in the *General Report of Scotland* (vol. i. p. 123.) an account of the rental of each county, exclusive of houses, but inclusive of mines, fisheries, quarries, &c., for 1810, deduced from these returns. Unluckily, however, this table contains some very gross errors*: these we have endeavoured to correct; and the following amended table differs very little in the result from the correct returns, and is, we believe, nearly accurate. (See Table, next page.)

We believe, for reasons similar to those stated in reference to England, that the rental of Scotland does not differ very materially at this moment from its amount in 1810. There have certainly been considerable variations in particular districts; but from all that we have been able to learn, we incline to think that the fall in some quarters has been fully balanced by an equal rise in others; and that, on the whole, the aggregate rent of the country at the two periods is pretty nearly equal. In 1815 the total rental of Scotland, exclusive of houses, amounted to 5,278,685*l.*, being a rise of 427,281*l.* on its amount in 1810.

It is difficult to decide as to the share of the entire rental to be set apart as the rent of the 14,000,000 of uncultivated acres; but there are good grounds for thinking that it does not exceed 850,000*l.*, leaving 4,000,000*l.* as the nett rental of the arable portion, being at the rate of 16*s.* an acre. Though there are considerable exceptions, there can be no manner of doubt that, speaking generally, the arable land of England is of a decidedly superior quality to that of Scotland; but, in consequence of the greater skill and economy of the farmers in the latter, and of the advantage they enjoy in the possession of leases, and the absence of tithes and poor rates, they are able to pay much higher rents for lands of equal fertility. The rent of corn land in Scotland varies from 7*s.* to 3*l.* an acre, and occasionally even amounts to 5*l.* and 6*l.* The best pasture land rarely fetches more than 3*l.* per acre; and that which is of a medium quality may vary from 14*s.* to 25*s.*

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* In the table in question, the gross rental of the stewardry of Kircudbright, in 1810, is stated to have been 22,752*l.*, whereas it really amounted to 192,047*l.*! — (See *Scotsman*, No. 588.) The gross rental of Kinross-shire is, in the same table, set down at 83,488*l.*, being above 60,000*l.* too much! These blunders have been copied into some dozen publications.

Table showing the Extent in Statute Acres of the different Counties of Scotland, exclusive of Lakes; the total Rental of the Land, including Mines, Fisheries, &c., according to the Returns under the Property Tax Act for the Year ending 5th of April, 1811; with the Annual Rent per Acre of the Land, &c., in each County; and the Gross Valued Rent of each County.

Counties.	Statute Acres.	Ascertained Rental for 1810.	Rent per Acre in 1810.			Valued Rent in Scotch Money.*		
		£	£.	s.	d.	£	s.	d.
Aberdeen - -	1,254,400	233,827	0	3	8¾	235,665	8	11
Argyle and Isles -	2,002,560	192,074	0	1	11	149,595	10	0
Ayr - - -	664,960	336,472	0	10	1½	191,605	0	7
Banff - - -	412,800	79,396	0	3	10¼	79,200	0	0
Berwick - -	282,880	231,973	0	16	5	178,366	8	$6\frac{7}{24}$
Caithness - -	439,680	30,926	0	1	5	37,256	2	10
Clackmannan - -	30,720	32,048	1	0	10¼	26,482	10	10
Cromarty - -	163,840	10,860	0	1	4	12,897	2	$7\frac{8}{13}$
Dumfries - -	801,920	246,002	0	6	1½	158,502	10	0
Dunbarton - -	145,920	56,973	0	7	9¼	33,327	19	0
Edinburgh - -	226,560	277,828	1	4	6¼	191,054	2	9
Elgin - - -	302,720	62,312	0	4	1¼	65,603	0	5
Fife - - -	298,880	335,291	1	2	5¼	363,192	3	$7\frac{2}{13}$
Forfar (Angus) -	568,320	260,197	0	9	1¾	171,239	16	8
Haddington - -	174,080	180,654	1	0	9	168,873	10	8
Inverness and Isles -	2,594,560	145,844	0	1	1½	73,188	9	0
Kincardine - -	243,200	159,896	0	13	1¾	74,921	1	4
Kinross - -	46,080	22,753	0	9	10½	20,250	4	$3\frac{2}{3}$
Kirkcudbright - -	525,760	192,047	0	7	3¼	114,537	2	$3\frac{322}{381}$
Lanark - -	602,880	298,019	0	9	10½	162,131	14	6
Linlithgow - -	76,800	82,947	1	1	7¼	75,018	10	6½
Nairn - - -	124,800	11,726	0	1	10½	15,162	10	11
Peebles - - -	204,160	57,382	0	5	7½	51,937	13	10
Perth - -	1,656,320	460,739	0	5	6¼	339,892	6	9
Renfrew - -	144,000	127,069	0	17	7¾	69,172	1	0
Ross and Isles - -	1,682,560	91,090	0	1	1	75,043	10	3
Roxburgh - -	457,600	230,663	0	10	1	314,663	6	4
Selkirk - -	168,320	39,776	0	4	8¾	80,307	15	6
Stirling - - -	312,960	177,499	0	11	4¼	108,509	3	$3\frac{1}{13}$
Sutherland - -	1,122,560	28,457	0	0	6	26,093	9	9
Wigtown - -	288,960	123,837	0	8	6¼	67,641	17	0
	18,021,760	4,816,577						
Islands.								
Hebrides, viz, Bute, &c. (Isles of Argyle, Inverness, Ross, and Cromarty included in counties.)	103,040	18,591	0	3	7¼	15,042	13	10
Orkney Isles - -	272,000	9,495	0	0	8½	57,786	0	$4\frac{47}{100}$
Shetland Isles - -	547,200	6,741	0	0	3			
	18,944,000	4,851,404				3,804,221	0	0
The average Rent per Statute Acre in Scotland, in 1810, on the data here given, was -			0	5	1½			

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* By *valued rent*, is meant the rental as ascertained by valuations made previously to 1667, or by the Commissioners appointed to carry the act of that year into execution. The Land Tax, and most other public burdens falling on the land, have ever since been assessed according to the valued rent. — (See *Erskine's Principles of the Law of Scotland*, p. 170. ed. 1827.)

Rise of Rent in Scotland. — Rent has increased much more rapidly in this part of the island than in England. This is ascribable partly to the extremely backward and depressed state of Scotch agriculture till after the peace of Paris in 1763, and partly to the extraordinary advance it has made since the close of the American war. The entire rental of the kingdom is not supposed to have exceeded 1,000,000*l.* or 1,200,000*l.* in 1770. In 1795 it is believed to have rather exceeded 2,000,000*l.*; and since then it has been more than doubled! So rapid an increase of rent is probably unmatched in any old settled country; and indicates an astonishing degree of improvement.

Distribution of Rent in Scotland.—Landed property in Scotland is less divided than in England; and, owing to the system of strict entail, now so general in that part of the empire, it is daily accumulating in larger masses. The total number of proprietors in Scotland has been estimated at about 7,800, of whom more than 6,000 are the owners of properties worth 600*l.* a year and under.—(*General Report of Scotland*, vol. iii. Append. p. 4.)

Owing to the greater economy with which most sorts of farm labour, particularly ploughing, is performed in Scotland, the capital on Scotch farms is, we believe, a good deal less than on English farms of the same value. We should not be inclined to reckon it at more than 30,000,000*l.* on the 5,000,000 arable acres in Scotland. The profits of the farmers may be reckoned at 3,500,000*l.*

Number of Farmers and Size of Farms.—We have already given some details with respect to these points (*antè*, p. 446.), in so far as respects England. In Scotland the proportion of land occupied by tenants is a good deal larger than in England; so much so, that we should not be disposed to estimate the entire annual value of the lands of that kingdom occupied by owners at more than 500,000*l.* a year. If this supposition be well founded, there will remain land worth 4,000,000*l.* a year occupied by tenants; which, supposing they pay, at an average, each 100*l.* a year, would make the total number 40,000.

III. IRELAND.

Cultivated and Uncultivated Land—Rent, &c. — There are no means of forming any accurate estimates as to any of these points. The property tax did not extend to Ireland; and all that we have to trust to in determining its rental are estimates deduced from the rentals of particular estates, or from valuations made for the assessment of the local burdens, and for the adjustment of the composition on account of tithe. The first, unless made with unusual care, is rarely much to be depended on, and leads almost always to exaggerated conclusions. In 1727, Mr. Brown computed the gross rental of Ireland, inclusive of quit rents, tithes, &c., at 2,824,000*l.*; and in 1778 Mr. Young estimated it at 6,000,000*l.*—(*Newenham's View of Ireland*, p. 232.) Mr. Wakefield, from minutes collected in his tour, estimated the average rental of Ireland at 27*s.* the Irish acre, or at 16*s.* 6½*d.* the Imperial acre (vol. i. p. 305.); and, notwithstanding the imperfect data on which it was founded, this estimate, though in excess, came pretty near the mark. No doubt, however, the elaborate estimate framed by Mr. Griffith, and contained in his evidence given in the *Second Report of the Lords' Committee on Tithe* (1832), is much more deserving of attention: it is principally bottomed on official valuations, and is probably, therefore, a little under the mark. According to Mr. Griffith, the average rent of Ireland, exclusive of the value of houses in Dublin, Cork, Belfast, Limerick, and other large towns, amounts, at present, to 12*s.* 5½*d.* the statute acre. But the area assigned to the different counties, and to the kingdom in general, by Mr. Griffith, on which he estimates the rent, includes the fresh-water lakes or loughs, comprising an area of 455,399 acres. These, however, ought certainly to be excluded. Supposing this to be done, the average rent, per statute acre, of the *land* of Ireland, will, according to the data published by Mr. Griffith, be 12*s.* 9*d.* an acre; and, allowing for the probable inferiority of the valuation for the local assessments to the actual rent, the latter may, perhaps, be taken at about 13*s.* 6*d.* an acre at an average of the island, including mountains and bogs, but excluding lakes.

The following table, carefully compiled from the data supplied by Mr. Griffith to the Tithe Committee, exhibits the cultivated and uncultivated land in each county and province, the average rent per acre, &c. —

TABLE of the Extent of the several Counties of Ireland, exclusive of Lakes, distinguishing the Cultivated Land from the Unimproved Mountain and Bog; showing also the Proportion of Cultivated Land in each County, assuming 1,000 to represent the Total Extent of Cultivated Land in Ireland, with the estimated Rental of the Land in the several Counties, and the Average Rent per Statute Acre.

Provinces and Counties.	Cultivated Acres.	Unimproved Mountain and Bog.	Total Extent of Acres, exclusive of Lakes.	Proportion of Cultivated Acres, assuming 1,000 as the whole Cultivated Land of Ireland.	Estimated Rental of the Land of each County.	Average Rent per Statute Acre.		
LEINSTER.					£	£	s.	d.
Carlow - - -	196,833	23,030	219,863	13·478,506	164,895	0	15	0
Dublin - -	237,819	10,812	248,631	16·285,099	250,201	1	0	1½
Kildare - - -	325,988	66,447	392,435	22·322,635	255,082	0	13	0
Kilkenny - -	417,117	96,569	513,686	28·562,863	437,693	0	17	0½
King's - - -	394,569	133,349	527,918	27·018,847	317,019	0	12	0
Longford - -	192,506	55,247	247,753	13·182,207	151,595	0	12	3
Louth - - -	191 345	14,916	206.261	13·102,705	164,765	0	16	0
Meath - -	561,527	5,600	567,127	38·451,607	510,414	0	18	0
Queen's - - -	335,838	60,972	396,810	32·997,132	277,767	0	14	0
Westmeath - -	313,935	55,982	369,917	21·497,284	251,063	0	13	7
Wexford - - -	545,979	18,500	564,479	37·386,928	395,134	0	14	0
Wicklow - -	400,704	94,000	494,704	27·438,952	296,822	0	12	0
	4,114,160	635,424	4,749,584	281·724,765	3,472,450			
Average rent per statute acre in Leinster.	- -	- -	- -	- - -	- -	0	14	7½

Table of the Extent of the several Counties of Ireland—*continued.*

Provinces and Counties.	Cultivated Acres.	Unimproved Mountain and Bog.	Total Extent of Acres exclusive of Lakes.	Proportion of Cultivated Acres, assuming 1,000 as the whole Cultivated Land of Ireland.	Estimated Rental of the Land of each County.	Average Rent per Statute Acre.
MUNSTER.						
Clare - - - -	524,113	259,584	783,697	35·889,613	441,293	0 11 3
Cork - - - -	1,068,803	700,760	1,769,563	73·188,275	1,203,936	0 13 7¼
Kerry - -	581,189	552,862	1,134,051	39·797,999	344,616	0 6 1
Limerick - -	582,802	91,981	674,783	39·908,452	629,932	0 18 8
Tipperary - -	819,698	182,147	1,001,845	56·130,347	886,439	0 17 8½
Waterford - -	353,247	118,034	471,281	24·189,246	295,324	0 12 6
	3,929,852	1,905,368	5,835,220	269·103,932	3,801,540	
Average rent per statute acre in Munster.	- -	- -	- -	- - - -	- -	0 13 0¼
ULSTER.						
Antrim - - - -	483,106	225,970	709,076	33·081,583	569,149	0 16 0½
Armagh - -	267,317	42,472	309,789	18·305,029	178,955	0 11 6½
Cavan - - - -	421,462	30,000	451,462	28·860,395	307,741	0 13 7½
Donegal - -	520,736	644,371	1,165,107	35·658,367	349,501	0 6 0
Down - - - -	502,677	108,569	611,246	34·421,743	489,123	0 16 0
Fermanagh - -	320,599	101,952	422,551	21·953,613	259,241	0 12 3
Londonderry - -	372,667	136,038	508,705	25·519,067	310,962	0 12 2¼
Monaghan - -	309,968	9,236	319,204	21·225,636	212,581	0 13 3¼
Tyrone - -	555,820	171,314	727,134	38·060,809	528,065	0 14 6¼
	3,754,352	1,469,922	5,224,274	257·086,242	3,205,318	
Average rent per statute acre in Ulster.	- -	- -	- -	- - - -	- -	0 12 3¼
CONNAUGHT.					£.	£. s. d.
Galway - - - -	955,713	476,957	1,432,670	65·444,227	868,894	0 12 1½
Leitrim - -	266,640	128,167	394,807	18·258,670	210,187	0 10 7¾
Mayo - - - -	871,984	425,124	1,297,108	59·710,728	550,018	0 8 5¼
Roscommon - -	453,555	131,063	584,618	31·058,023	379,628	0 13 0
Sligo - - - -	257,217	168,711	425,928	17·613,413	227,443	0 10 8¼
	2,805,109	1,330,022	4,135,131	192·085,061	2,236,170	
Average rent per statute acre in Connaught.	- -	- -	- -	- - - -	- -	0 10 9¾
Grand Total -	14,603,473	5,340,736	19,944,209	1,000·000,000	12,715,478	
Average value per statute acre in the whole kingdom				- -	-	0 12 9

N. B.—The estimated value here given is exclusive of the value of the houses in the cities of Dublin, Kilkenny, Drogheda, Cork, Limerick, Waterford, and Galway.

The annual value of the unimproved mountains and bogs has been variously estimated at from 500,000*l.* to 700,000*l.* If we suppose the latter to be the more correct sum, it will leave for the gross rental of the cultivated land of Ireland, amounting to 14,603,000 acres, a sum of about 12,000,000*l.*, equivalent to a rental of about 16*s.* 5*d.* an acre, which, allowing as before for deficiencies in the valuation may, perhaps be increased to 17*s.* or 17*s.* 6*d.* an acre.

It has been said, that this is by no means a high rent, and that it goes far to weaken the credit to be attached to the statements, as to the excessive competition for land in Ireland. Such, however, is not the case. Considering the wretchedly defective system of agriculture that prevails in Ireland, and the fact that the land has to support more than three times the number of individuals that can be advantageously employed upon it, 17*s.* per statute acre is a very high rent. This, however, is not the only payment in the shape of rent that has to be made by the occupiers; what is called the "Tenant's Right," exists almost every where in Ireland. This is a custom which has grown up of an outgoing tenant bargaining with his successors for his good-will, or for leave to enter peaceably into the possession; and is as uniformly the subject of negotiation and arrangement as the rent to be paid to the landlord! A system of this sort, though a serious inroad on the right of property, and strongly evincing the inadequacy of the law to afford security and protection, is firmly established in most parts of Ireland; so much so, that the fact of a tenant being ejected for an arrear of rent, is no bar to his selling his good will. The sums paid on this account are sometimes quite enormous, *antè* p. 510. The peasantry, who justly look upon this system as opposing a formidable obstacle to their being deprived of their holdings by the introduction of a new class of occupiers, are all warmly attached to it; and were an individual to enter on a farm without having effected an agreement as to the "Tenant's Right," with its previous occupier, the chances are ten to one that his property, and probably his life, would be endangered!

Distribution of Land.—Quantity and Value of Agricultural Produce.—There are no means whatever for forming any estimates of the extent of land under different crops in Ireland. Of the 8 millions of people in that part of the empire, it is supposed that about 5 millions are principally dependent on the potato; and of the remaining 3 millions, 2,500,000 are believed to be principally dependent on oats. According to the table previously given (p. 514.), the average produce per statute acre in oats is 44½, Winch. bushels; and estimating the consumption of each of the 2,500,000 individuals principally fed on oats at 2½ quarters, we should have 1,110,000 acres employed in raising food for them; and adding to this the quantity required for the partial feeding of others, for seed, the feeding of horses, and other internal purposes, and for exportation to England, the whole land under oats may, perhaps, be taken at from 3,000,000 to 3,500,000 acres. The extent of land under wheat and barley does not, probably, exceed 600,000 or 700,000 acres.

Mr. Griffith, as already seen, estimates the whole extent of Ireland, exclusive of lakes, at about 19,944,000 statute acres. He further estimates the unimproved mountain and bog at 5,340,000 acres, leaving 14,603,000 acres of land fit for tillage, pasture, &c. Now, if we estimate the average annual value of the produce of this land, tillage as well as pasturage, at 3*l.* an acre, the entire annual value of the land produce of Ireland, exclusive of bogs, will be 43,809,000*l.*; and including bogs, it may be taken at 44,500,000*l.* This estimate is, of course, merely given as a very rude approximation. The Commissioners of Poor Inquiry in Ireland estimated the total annual value of its land produce at only 36,000,000*l.* But the reasons they assign for this estimate are of the least satisfactory description, and we have no doubt that it is below the mark. — (*App.* H., Part I.)

Deductions from the Rent. — Landed property in Ireland is placed under what would be considered in England very advantageous circumstances. There is neither land tax nor poor's rate to pay: the landlord, as has been seen, rarely lays out a sixpence on farm buildings or repairs: even the agent, instead of receiving a salary, is frequently allowed to indemnify himself by extorting fees from the tenants; so that the rent-roll, and the free income, are identical. But, with the exception of the relief from the land tax, it may well be doubted whether these apparent advantages should not be considered very serious disadvantages. A poor's rate would put a stop to the vagrancy that is so prevalent in Ireland; and it would be signally beneficial to the landlords, by obliging them to take effectual measures for preventing the subdivision of the land, and the increase of cottages. The want of proper farm buildings is, in the end, quite as injurious to the owner of an estate as to the occupiers; and nothing can be imagined so hostile to the interests of all parties, as the payment of agents by fees collected from the tenants: it opens a wide door for oppression and jobbing of all sorts, and puts an end to that confidence which should always exist between the tenants and the agent, and the latter and the landlord.

The Price of Land depends on the condition of the district in which it is situated. In some places it is hardly possible, except at the most imminent risk of personal danger, to eject a tenant from an estate, or to consolidate the small patches into which it may be divided. In such cases, land fetches, of course, a comparatively small price, perhaps not more than 17 or 18 years' purchase; but where good order prevails, and the law is respected, land fetches 28 or 30 years' purchase. Undoubtedly, however, a feeling of insecurity attaches to all investments in Ireland; and this circumstance contributes to keep down the price of land in it, and hinders English capitalists from making loans on the usual terms on most Irish estates. Were the security of property and the empire of the law as well established in Ireland as in Britain, land would certainly sell higher in the former than in the latter. Most Irish estates are, comparatively, in a state of nature; and afford capacities for the profitable outlay of capital that are all but unknown in England.

NUMBER OF PERSONS EMPLOYED IN AGRICULTURE.

The following tables, extracted from the parliamentary returns, contain all the existing information on this important subject: —

Account of the Number of Families chiefly employed in Agriculture; and of the Number of Males of Twenty Years of Age and upwards, being Occupiers employing Labourers, Occupiers not employing Labourers, and Labourers engaged in Agriculture, in England, Scotland, and Ireland, specifying those belonging to each Class in each County.

ENGLAND.	Families chiefly employed in Agriculture.	Occupiers employing Labourers.	Occupiers not employing Labourers.	Labourers employed in Agriculture.
Counties.				
Bedford - -	11,364	1,330	474	11,588
Berks - -	14,047	1,711	458	14,802
Bucks - - -	16,893	2,152	453	16,743
Cambridge -	16,093	2,421	1,266	15,698
Chester - -	16,397	4,374	4,059	15,094
Cornwall - -	18,351	4,608	3,613	16,243
Cumberland -	10,630	3,617	2,839	9,010
Derby - - -	13,324	3,320	4,257	10,593
Devon - -	35,505	9,328	3,356	35,311
Dorset - - -	14,601	2,243	967	14,056
Durham - -	8,408	2,229	1,541	7,556
Essex - - -	34,589	4,561	888	38,234
Gloucester -	21,185	3,675	1,846	20,927
Hereford - -	12,888	2,505	1,679	12,213
Hertford - -	13,268	1,518	399	14,700
Huntingdon -	6,231	857	397	5,967
Kent - - -	31,667	4,361	2,152	36,113
Lancaster -	24,696	6,658	9,714	20,949
Leicester - -	12,352	2,656	2,145	10,542
Lincoln - -	35,749	6,901	6,204	32,167
Middlesex -	9,882	1,050	490	11,376
Monmouth - -	5,614	1,048	1,143	4,845
Norfolk - -	37,610	5,229	2,718	37,466
Northampton -	18,331	3,015	1,117	17,775
Northumberland	10,127	2,376	1,268	10,441
Nottingham -	13,351	2,613	2,414	11.799
Oxford - -	15,304	2,034	458	15,998
Rutland - -	2,299	429	424	1,910
Salop - -	17,096	3,832	2,139	17,296
Somerset - -	30,452	6,032	3,731	28,107
Southampton -	22,761	2,774	1,251	24,675
Stafford - -	18,156	3,781	3,649	16,812
Suffolk - -	31,491	4,526	1,121	33,040
Surrey - - -	14,647	1,873	727	16,761
Sussex - -	22,450	3,160	1,330	26,125
Warwick - -	15,830	2,838	1,142	15,641
Westmoreland -	4,454	1,435	1,685	3,474
Wilts - - -	25,015	3,387	1,239	24,708
Worcester -	14,654	2,636	1,260	14,590
York, East Riding	13,025	3,331	1,661	12,727
City & Ainsty	1,326	340	253	1,184
North Riding	17,964	4,950	4,334	14,646
West Riding	31,188	7,096	10,636	24,502
Totals -	761,348	141,460	94,883	744,107

WALES.	Families chiefly employed in Agriculture.	Occupiers employing Labourers.	Occupiers not employing Labourers.	Labourers employed in Agriculture.
Counties.				
Anglesea -	5,314	1,215	1,536	3,870
Brecon - -	3,959	1,249	1,156	2,822
Cardigan - -	7,246	2,002	1,931	4,753
Caernarvon -	9,987	2,735	3,074	6,910
Caermarthen -	5,778	1,506	2,237	4,360
Denbigh - -	8,135	2,264	1,621	6,465
Flint - -	4,660	1,010	846	4,192
Glamorgan -	6,814	1,823	1,939	5,192
Merioneth -	3,583	1,112	1,246	2,661
Montgomery -	6,610	1,938	1,610	5,747
Pembroke -	7,974	1,842	1,864	6,075
Radnor - -	3,135	1,032	911	2,451
Totals -	73,195	19,728	19,966	55,468

SCOTLAND.	Families chiefly employed in Agriculture.	Occupiers employing Labourers.	Occupiers not employing Labourers.	Labourers employed in Agriculture.
Aberdeen - -	13,454	3,591	6,012	9,018
Argyle - -	9,116	1,274	5,823	5,710
Ayr - - -	6,967	1,830	1,725	4,858
Banff - -	4,264	922	2,183	2,721
Berwick - -	2,921	433	189	2,851
Bute - - -	832	133	457	858
Caithness - -	3,580	441	2,408	1,378
Clackmannan -	385	81	50	393
Dunbarton -	1,099	342	299	1,048
Dumfries - -	4,358	1,241	939	3,927
Edinburg -	3,639	665	274	3,637
Elgin or Moray -	2,605	560	1,055	1,789
Fife - - -	4,632	1,038	613	4,434
Forfar - -	4,969	1,089	1,099	4,466
Haddinton -	2,811	308	90	2,870
Inverness -	9,892	826	7,204	4,251
Kincardine -	2,976	760	816	2,147
Kinross - -	440	114	86	444
Kircudbright -	2,826	871	490	2,648
Lanark - -	4,504	1,493	1,349	3,803
Linlithgow -	1,093	295	179	952
Nairn - -	742	280	354	403
Orkneys, &c. -	7,159	815	6,238	1,008
Peebles - -	736	216	79	808
Perth - - -	7,404	2,482	2,787	6,778
Renfrew - -	2,016	770	535	2,012
Ross, &c. -	8,498	639	6,357	2,861
Roxburgh -	3,134	545	514	3,058
Selkirk - -	474	86	36	499
Stirling - -	2,362	285	605	2,807
Sutherland -	3,567	102	2,434	686
Wigtown - -	3,156	820	487	2,669
Totals -	126,591	25,887	53,966	87,292

SUMMARY OF GREAT BRITAIN.	Families chiefly employed in Agriculture.	Occupiers employing Labourers.	Occupiers not employing Labourers.	Labourers employed in Agriculture.
England - -	761,348	141,460	94,883	744,407
Wales - - -	73,195	19,728	19,966	55,468
Scotland - -	126,591	25,887	53,966	87,292
Totals -	961,134	187,075	168,815	887,167

IRELAND.	Families chiefly employed in Agriculture.	Occupiers employing Labourers.	Occupiers not employing Labourers.	Labourers employed in Agriculture.
Leinster -	186,177	20,789	87,819	162,417
Munster -	244,770	33,443	120,268	212,347
Ulster - -	268,864	29,301	189,087	120,795
Connaught -	184,528	11,806	167,100	71,882
Totals -	884,339	95,339	564,274	564,441

SECT. X. *Slow Progress of Agricultural Improvements.—Notices of the Progress and Present State of English and Scotch Agriculture.*

1. *Slow Progress of Agricultural Improvement—Circumstances which retard it.*—Considering the wonderful facilities of communication that exist in Great Britain, and the universal diffusion of information by means of the press, the slowness with which agricultural improvements make their way is not a little surprising. Mr. Harte mentions that, when he was a youth, he heard Jethro Tull declare that though he had introduced turnips into the field in King William's reign, with little trouble or expense, and great success, the practice

did not travel beyond the edges of his own estate till after the Peace of Utrecht.—(*Essays*, ii. p. 223.) It might, one should think, be reasonably enough supposed that improved practices would now be much more rapidly diffused; but experience shows that this is not really the case. "What is well known and systematically practised in one county, is frequently unknown, or utterly disregarded, in the adjacent districts; and what is to every unprejudiced observer evidently erroneous and injurious to the land, is, in some quarters, persisted in most pertinaciously, though a journey of not many miles would open to the view the beneficial effects of a contrary practice."* In a large portion of England there is no regular alternation of corn and green crops, and in many counties the drill husbandry has hardly obtained any footing. When speaking of the state of agriculture in Worcestershire, Messrs. Kennedy and Grainger observe, "The mode of farming in this county is generally in itself a very bad one, and is carelessly and negligently conducted. There being no restriction as to rotation or manner of cropping, there is no regular system, but the plan usually adopted is, to sow the land that requires the least work, and barley and oat stubbles are frequently dunged over after harvest, and sown with wheat; a system of farming which certainly does not require much labour, but it is a ruinous one to the land. No pains whatever are taken to relieve the ground from water, nor is a water-furrow to be seen scarcely in any part of the county. The ploughing is, in general, very indifferently performed, and the appearance of the land is sufficient to convince any one that neither master nor man have here any system to act upon."—(Vol. i. p. 358.) The agriculture of Somerset, Oxford, Sussex, Middlesex, Surrey, Berks, and several other counties, is hardly more advanced. In Wales, agriculture is more backward than in the most unimproved of the English counties. In Anglesea, a few years ago, it was not uncommon to take *five* corn crops in succession; and throughout the principality the arable land is, with few exceptions, wretchedly managed. In fact it "*does not produce half what it is capable of doing under proper management.*"—(*Kennedy and Grainger*, vol. i. p. 169.)†

Notwithstanding, too, that the best cultivated lands in Northumberland, Norfolk, and the Lothians are all ploughed by 2 horses, nothing is more common, as already stated, than to see in the vicinity of the metropolis, and throughout most parts of the south and west of England, 3, 4, and, still more frequently, 5 horses yoked in a line to a plough, even where the soil is light and sandy! And as a driver is always necessary when there are more than 2 horses, at least double the labour is expended on ploughing where this barbarous practice is followed that is required where it is abandoned.

It is very difficult to account for this rooted disinclination to leave established practices, even after experience has clearly demonstrated the superiority of others. There is no ground for ascribing it to the influence of tithes, poor rates, or other public burdens; for these press as heavily in Norfolk, Northumberland, Suffolk, and Hampshire, as in

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* *Kennedy and Grainger on the Tenancy of Land,* vol. i. introd. p. 8.

† See *antè*, p. 224.

Worcestershire, Somerset, or Sussex. The truth is, that there is a much greater aversion to precipitate changes, and a more resolute adherence to whatever has been long practised, among farmers, than amongst any other class of persons. "Improvements, which effect material changes in established customs, have, under all circumstances and in all countries, ever been slowly and reluctantly admitted. It requires no little effort to quit the common routine of practice, and still more to relinquish long maintained opinions. The general circumstances affecting agriculture are, moreover, little favourable to great and, more especially, sudden alterations. The farmer is not so much within reach of information as the merchant and manufacturer; he has not, like those who reside in towns, the means of ready intercourse, and constant communication, with others engaged in the same occupation. He lives retired; his acquaintance is limited, and but little valued; and, unless in the habit of reading, he is little likely to acquire any other knowledge of his art than what is traditionary, what is transmitted from father to son, and limited, in its application, to his own immediate neighbourhood." *

The able writer from whom we have borrowed this striking passage thinks that the obstacles to the more rapid diffusion of agricultural improvements will be gradually overcome by the ready access that is now afforded to all sorts of information. We confess, however, that we are by no means sanguine in our expectations on this head; and that we should anticipate ten times more from the efforts of the landlords to enforce a better system, than from any improvement in the knowledge of the farmers. The former have it in their power, by granting leases of a reasonable length, and containing judicious regulations, and by raising their rents to a proper level, speedily to introduce a better system; and by doing so they will at once add largely to their own wealth, and to that of their tenants and of the public. Agricultural clubs, shows, premiums, and essays have done, and can do but little good. The disease is too deeply seated to be eradicated by such gentle means. Let the tenants have security that they shall be allowed to reap all the advantages resulting from increased outlays of capital, and from additional skill and economy; and let them, at the same time, be made to feel that their existence depends on their availing themselves of improved processes and machinery; and we venture to predict that agriculture will make a more rapid progress in ten or a dozen years than it will otherwise do in a century.

2. *Notices of the Progress of English Agriculture.*—Agriculture, and all sorts of industrious pursuits, were kept in a peculiarly backward state in England till after the accession of Henry VII. This arose partly from the destructive contests that grew out of the wild efforts of our Norman monarchs to conquer France, and the civil wars by which they were succeeded; and partly from the abuses produced by the feudal system, and the enslaved and depressed state of the cultivators of the soil. In Henry's reign the foundations were laid of an order of things more favourable to the growth of opulence, and the progress of improvement. By his marriage, he united the opposing

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* Rigby's preface to his translation, of *Chateauvieux, on the Agriculture of Italy*

claims of the rival houses of York and Lancaster; and put an end to those unhappy quarrels that had, for upwards of 40 years, desolated the country. He also succeeded in repressing the turbulence, and in undermining the power, of the feudal aristocracy; and in establishing a system of severe, but generally, impartial, justice. Hitherto it had been the practice to let lands to occupiers who paid a portion of their rents in kind, and a portion in services. But Henry having succeeded in obliging the great lords to dismiss their retainers, it became for their interest to convert the service rents into money rents; a change still more beneficial to the occupiers than to their landlords. The increase of cities, the revival of arts, and the introduction of new branches of commerce, and of new tastes and modes of enjoyment, contributed to hasten and complete that revolution in our social system which the policy of Henry had done so much to accelerate. The great lords, unable any longer to vie with each other in the number and boldness of their retainers, turned their competition into more advantageous channels, and began to seek for distinction in the magnificence of their dress and houses, the expensiveness of their tables, and the splendour of their equipages. It ceased to be desirable to have a large dependent population on an estate; the object being to have it occupied so that it might produce the greatest nett revenue. The small occupiers, who were in consequence ejected from the estates of the great lords, being without any settled habits of industry, were at once deprived of the means of subsistence. Hence the extraordinary increase of vagrant poor in the reigns of Henry VII., Henry VIII., and Elizabeth; and hence, also, the origin of the compulsory provision for the support of the poor. The lands previously possessed by the retainers, and small occupiers, were immediately converted into sheep pasture. Wool formed at the accession of Henry VII., and for a long time before and after, the principal article of export from England; with the exception indeed of tin, cheese, and a few other articles of inferior importance, there were no means of paying for foreign articles except by exports of wool. When, therefore, the taste of the nation began to improve, and its wealth to increase, wool became in greater demand than ever, as a means of carrying on the more extensive commerce of the country. In consequence, sheep-farming went on increasing, notwithstanding the efforts of the legislature to arrest its progress, till the increase of manufactures at home furnished other materials to send abroad, and till the growth of population, by augmenting the demand for corn, raised its price in relation to wool, and checked the growth of the latter. This change began to become manifest during the latter years of the reign of Elizabeth.

The first English treatise on agriculture, entitled the *Book of Husbandry*, written by Sir Anthony Fitzherbert, judge of the Common Pleas, was published in the reign of Henry VIII. It contains much useful information; and, in some material branches, has not been improved upon. The culture of hops, and of several species of garden plants, was introduced into England in this reign. In it, too, the power of making leases was extended to tenants in tail; to tenants in right of their wives; and to parsons in right of their churches.

Turnips, clover, and potatoes were all introduced into England in the seventeenth century. Mr. Stevenson states, that some of the landed proprietors, who accompanied Charles II. in his exile, introduced, after the Restoration, several of the principles, modes of agricultural practice, and crops, they had observed on the Continent, and particularly in Flanders; and that we are indebted to them for the first examples of the culture of turnips and clover, the two grand instruments for improving agriculture. But, though there can be no doubt that these circumstances had a considerable influence in diffusing the knowledge of a better system of cultivation, it is certain that the crops referred to had been introduced into England a good many years previously to the Restoration. Sir Richard Weston, in his *Discourse of Flanders Husbandry*, published in 1645, recommends the sowing of clover and other grass seeds alone, and not with spring corn, contrary to the custom of England and Flanders; adding, "*I found by experience in Herefordshire*, that it (clover) will thrive much better the first year, and turn to more profit alone, than that and a crop of oats sown together will do."—(P. 17.) It is probable that turnips were introduced about the same time. Ray, in 1686, mentions that turnips were cultivated for the sake of their roots, both in fields and gardens, in England and abroad. It appears from Lisle's *Husbandry* (4th ed. p. 233.), that about the year 1700 the field culture of turnips was not uncommon in Norfolk, Leicestershire, Hampshire, &c.; but it is notwithstanding true that it spread only by slow degrees. Lord Townshend, in the reign of George II., was one of the most successful and extensive growers of turnip; but there is no foundation whatever for the common story that their culture was introduced by him.

There is a discrepancy in the accounts as to the introduction of potatoes. Most probably they were brought over from Virginia by Sir Walter Raleigh. Houghton, in one of his papers, written in 1699 (No. 386.), mentions that "they are now very numerous in Lancashire, and begin to spread all the kingdom over."

Blythe's *Improver Improved*, published in 1649, is the first systematic work in which there are any traces of the alternate system of husbandry, or of the introduction of clover, turnips, &c. between culmiferous crops. The practice did not, however, make much progress during the 17th century; and though it forms, as it were, the very foundation of good farming, there are extensive districts in which it is still very imperfectly understood, and but little followed.

The famous Jethro Tull was the first, or among the first, who introduced the drill husbandry; and his work on *Horse-hoeing Husbandry*, published in 1731, did a vast deal to recommend the practice; though, from his undervaluing the influence of manure, it was, in other respects, prejudicial.

The relaxation and ultimate abolition of the restraints and duties that had been laid on the exportation of corn gave, undoubtedly, the greatest stimulus to agriculture that it received in the seventeenth century. In England, as in other countries, exportation was for a long time entirely prohibited, from a notion that this was the best means by which plenty could be maintained at home. When the laws for this purpose were framed, the sound principles of public economy were almost wholly unknown; and no one seems to have been aware that, without the ability to export, a luxuriant crop, by causing an overloading of the market and a heavy fall of price, might be as injurious to the farmer as a scarcity; and that no market can be steadily and liberally supplied, unless the surplus produce of plentiful years meets with a profitable vent. Not only, however, was exportation to foreign countries prevented, but even the internal corn trade was laid under the severest restraints; and the business of a corn dealer was in a great measure proscribed. But the constant alternation of excessively high and ruinously low prices, which this system occasioned, at length opened the eyes of the legislature to a sense of its pernicious influence; and, in the reign of Elizabeth, exportation was allowed when the home prices were under certain limits.* During the ascendancy of the house of Stuart, the practice of laying duties on the exportation of corn was introduced; but at the Revolution these were totally abolished, and the contrary policy adopted of granting a bounty on exportation. The laws restricting the freedom on the internal corn trade were almost wholly abolished in the reign of Charles II.; so that our farmers, having ready access not only to the markets of Great Britain, but to those of the Continent, were stimulated to put forth all their energies; and agriculture advanced with a rapidity unknown at any former period. Restrictions on importation were imposed at the Revolution, and had existed previously; but it was not till after the Peace of Paris in 1763, when, in consequence of the rapid growth of manufactures and commerce, population increased so fast that the home supply of corn became inadequate, that these restrictions began to attract attention, and to have a powerful influence.

But, notwithstanding the stimulus to cultivation given by the bounty, and by the rise of prices since 1760, and particularly during the late war, stock-husbandry has been more improved since 1750 than tillage husbandry. As soon as Bakewell's system of breeding began to be known, it was taken up and followed by spirited and judicious farmers in all parts of the country. Of these, Mr. Culley of Northumberland, was one of the most conspicuous. He published his *Observations on Live Stock* in 1786; and in it the just principles for improving the breeds of domestic animals were, for the first time, fully elucidated. This has had, as formerly observed, a wonderful influence in increasing the supply of butchers' meat. Indeed, the principal improvement in arable husbandry — the general introduction and superior management of green crops — may be, in no inconsiderable degree, ascribed to the anxiety of farmers to procure an abundant and suitable supply of food for their stock. The superior attention paid to stock-farming may probably be, to some extent at least, accounted for from the circumstance of tithe pressing with comparative lightness on pasture land, while it falls with its full weight on arable land, and operates powerfully to prevent the outlay of capital upon it. But, however it may be accounted for, there can be no doubt of the fact, that stock husbandry is now more advanced than tillage husbandry: and that, in all that belongs to the breeding and rearing of cattle, horses, sheep, and pigs, the English are, at present, superior to the Scotch, and to every other people.

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* Exportation had been previously allowed, but the limit when it was to cease was generally such as to render this license of little practical importance. See article *Corn Laws and Corn Trade* in the new edition of the *Encyc. Britannica.*

But, though surpassed by its kindred branch, the progress of arable husbandry in England since 1760, and of the improvements connected therewith, has notwithstanding been great. From the beginning of last century down to about 1765, we were in the habit of exporting large quantities of corn. During each of the 10 years ending with 1750, the exports amounted at an average, to 378,000 quarters of wheat, and 424,000 quarters of other grain. During the next decennial period, the exports were materially reduced; and, subsequently to 1770, the balance began to turn to the side of importation, to which it still continues to incline. This diminution of exports and increase of imports is, however, wholly ascribable to the greater demand for corn, caused by the rapidly increasing population and wealth of the country; and not, as has sometimes been contended, to any change in the corn laws, or to any decay of tillage. Mr. Charles Smith, the well-informed author of the *Tracts on the Corn Trade* (2d ed. p. 140.), estimated the consumption of wheat in 1765, at 3,840,000 quarters. Eight years after, the produce of the wheat crop was estimated at 4,000,000 quarters. In 1796, Lord Hawkesbury (afterwards Lord Liverpool) stated, in his place in the House of Commons, that government estimated the consumption of wheat at 6,000,000 quarters, of which only a very trifling portion was imported. And we have already seen that, in estimating the growth of wheat in England at this moment at 12,300,000 quarters, we shall certainly be within the mark.

The number of wastes, commons, and common fields was long, and, though much diminished, still continues to be a reproach to England, The two former are not cultivated: common fields are, however, subjected to the plough; but property in them is so much subdivided and intermixed, that they are altogether unsusceptible of improved cultivation. During the last and present century, much progress has been made in wiping off this stain on the rural economy of the country; and in nothing, indeed, has the progress of improvement been more remarkable than in this particular. The first inclosure act was passed in the reign of Charles II. Since the Revolution, the progress has been as follows: —

Reigns.	Number of Acts passed.	Number of Acres inclosed.
In Queen Anne's reign - - -	2	1,439
In George I. - - - -	16	17,660
In George II. - - - - - -	226	318,778
In George III. to 1797 - - - -	1,532	2,804,197

According to this statement, which is taken from the *Report of the Committee on Waste Lands*, it appears that each enclosure act passed during that period of the reign of George III. which terminated with 1797, enclosed, at an average, 1830 acres. Now it appears, from the official returns, that from 1798 to 1832, both inclusive, 2,103 enclosure acts were passed; and, supposing each to have enclosed, as before, 1830 acres, the total would amount to 3,848,490 acres; making, when added to the quantity enclosed previously to 1798, an aggregate of no less than 6,652,687 acres, enclosed since the accession of George III. But, as it seems probable that the earlier acts applied to a larger extent of land than the later ones, we may, perhaps, estimate the total extent of land enclosed and divided by act of parliament, from 1760 to 1832, at from 5,500,000 to 5,800,000 acres. And it may be safely affirmed that, in consequence of its enclosure, the produce of this immense extent of land has been increased, at least, from *four* to *five* fold! As might be expected, a decidedly greater number of enclosure acts were passed in 1802, and during the 5 years ending with 1814, when prices were enormously high, than in any other equal period.

Of the recent improvements, one of the most important has been the introduction of bone dust as a manure. In many places, but particularly in Lincolnshire, this has occasioned a vast increase of produce; and has enabled many extensive tracts to be brought into a high state of cultivation.

There has been, in fact, almost every where throughout the country, but especially in the northern counties, a progressive improvement in agriculture, effected partly by the better drainage of the land, partly by the adoption of better rotations, partly by the enforcement of greater economy in the management of the details, and partly by other causes. No doubt there is still, in many counties, very great room for further improvements; but there has been, even in the most backward, considerable advances made since the peace.

3. *Progress of Agriculture since* 1815.—It has frequently, indeed, been contended that, owing to the fall of prices, agriculture has declined materially since 1815, and in particular since 1820. This view of the matter is strongly supported in the *Report of the Agricultural Committee of* 1833: and it is but too certain that the fall in question involved very many persons, landlords as well as farmers, in very great difficulties; and in some districts, particularly in the southern parts of the island, there may have been a pretty general decline. On the whole, however, there is incontestible evidence to prove that, speaking of the kingdom generally, agriculture, far from declining, has really made an astonishing progress since 1815. How else could the extrordinary increase of population, that has taken place in the interval, have been provided for? There was either no increase, or none worth mentioning, in the quantity of foreign corn retained for home consumption during the 10 years ending with 1830, as compared with the previous 10 years (*Edinburgh Review*, vol. lviii. p. 290.); and yet the population increased during that interval from 14,391,000 to 16,537,000! Now it is impossible, that a result of this sort could have taken place, without either a very great increase of agricultural produce, or a signal and almost unprecedented falling off in the demand for corn. But the latter supposition is out of the question. Instead of there being any decline in the consumption, there can be no manner of doubt that, speaking generally, the bulk of the population consume, at this moment, more corn, and particu-

larly wheat, than at any former period. In fact, wheaten bread has now almost entirely superseded every other sort of bread. The consumption of rye, barley, and oats in the northern and south-western parts of England, and in Wales, is reduced to a mere trifle. All classes subsist mainly on wheaten bread; and during the last 10 years there has been a growing indisposition to use even the inferior sorts of such bread. In Scotland the change has been still more decided than in England; and we believe we are quite within bounds, when we express our conviction, that from five to ten times more wheat is consumed in Scotland at present than in 1790.

The increase of population previously to last census was at the rate of about 1½ per cent. per annum; and there is no reason to think that it has varied sensibly since (see *antè*, p. 439.). Now 1½ per cent. on a population of 16,539,000 gives an annual increase of no less than 248,000 individuals a year: so that it may be concluded, there are, at present (June, 1838), above 1,700,000 persons in Great Britain more than there were in it when the last census was taken. And yet, but little foreign corn was imported in 1832; and during the subsequent years to 1838, the ports were all but hermetically sealed to the foreigner. It is of importance, too, to observe that, notwithstanding the vastly increased demand for corn, the supply has been increased in a still greater ratio. This is evinced by the state of prices, which have fallen from 58*s.* 8*d.* in 1832 to 55*s.* 10*d.* in 1837, notwithstanding the crop of the last-mentioned year was considerably under an average.

A part of this extraordinary increase in the supply of corn is a consequence of the increased imports from Ireland; but this part is much less than is generally supposed. The imports of all sorts of grain from Ireland are, at present, from 1,200,000 to 1,400,000 quarters a year greater than in 1820. And during that period we have added about 3,880,000 individuals to the population of Great Britain; at the same time that, at an average, the consumption of individuals has been materially increased, and that there has been a very large increase in the number of horses — the great consumers of oats, the principal article of import from Ireland.

On the whole, therefore, it may be safely affirmed that the soil and agriculture of Great Britain furnish, at present, food sufficient for the comfortable subsistence of 3,500,000 inhabitants more than in 1820. Little, comparatively, of this wonderful result can be ascribed to the bringing of waste land into cultivation, or to the extension of tillage. It is principally a consequence of improved drainage, improved modes of management, and the adoption of improved processes and implements. In proof of the extraordinary change that has taken place, we may mention that, in the wolds of Lincolnshire, the crops of turnips are said to have become from *five* to *ten* times heavier within the last few years, from the application of bone manure to their culture; at the same time that there has been a proportional increase in the productiveness of other crops! — (*Antè*, p. 159.) Similar improvements, and in some instances quite as great, have been made in other parts of the country. It is gratifying, too, to know that the capacities of improvement are far from being any where exhausted. But what has been effected shows what might be done, were the productive energies of the more backward districts better developed, by the extension of the improved practices of Norfolk, Northumberland, Lincoln, &c. to other counties. The granting of leases of a reasonable length, and containing proper conditions as to management, would be the most likely means to bring about so desirable a result. It is impossible, indeed, to say to what extent, under such circumstances, improvement might be carried.

It should not be forgotten that the harvests have been, for these some years past, generally good. Were a bad harvest, or a series of bad harvests, to occur, prices would, of course, rise; and large quantities of foreign corn would be poured into the country. But, it is needless to say, that would not invalidate any of the above statements, or be any proof of the retrogression of agriculture.

4. *Notices of the Progress and present State of Scotch Agriculture.*—Though now highly improved, agriculture, down to a comparatively recent period, was in the most depressed state in Scotland. So late as the beginning of last century, and for a considerable period after, lands, even in the Lothians, were divided into *infield* and *outfield.* The whole manure made on the farm was laid upon the former, which was ploughed and cropped without intermission, so long, at least, as it would bear any thing. There was little alternation of crops; neither turnips, clover, nor potatoes had been so much as heard of; but corn followed corn in an unbroken series. Leases were but seldom granted, and the cultivators were destitute alike of capital and intelligence. In the *Countryman's Rudiments,* written by Lord Belhaven and published in 1723, we are informed that the "infield in East Lothian, where wheat is sown, is generally divided by the tenant into four divisions, or breaks, as they call them; viz., one of wheat, one of barley, one of peas, and one of oats; so that the wheat is sown after the peas, the barley after the wheat, and the oats after the barley." Here we have a rotation with three consecutive corn crops, and a crop of peas once every four years. The returns were, as might be expected, *about three times the seed!* It is of importance, too, to observe, that this trifling return was obtained at a great comparative expense. At this period, and for about half a century after, there was no instance in Scotland of a plough being drawn by fewer than 4 horses. Most commonly it was wrought either by 6 horses, or by 4 horses and 2 oxen; and in some of the less cultivated districts, a still greater number of animals, sometimes as many as 10 or 12, were yoked to it.* This was ascribable partly to the awkward and clumsy form of the implement itself, partly to the weakness of the cattle, their diminutive size, and the improper manner in which they were yoked; and partly, and principally, perhaps, to the ignorance of the cultivators. On the whole, however, the work was at once very expensive, and very ill performed; the ridges were crooked and twisted, and so much heaped up in the middle, that a great deal of land in the hollows between them was lost to any useful purpose.

In 1723, a Society of Improvers was established at Edinburgh, which, though it lasted only about 20 years, contributed to diffuse a knowledge of better principles.

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* *Robertson's Rural Recollections,* p. 196.

Though very ancient in England, in Scotland the practice of fallowing is comparatively recent. It began to be tried in the Lothians about 1720; but it spread slowly, and did not become very general till more than twenty years afterwards.*

Political circumstances have almost always exerted a powerful influence over agriculture; and nowhere, perhaps, has this been more clearly evinced than in Scotland. The Union with England in 1707, though its beneficial operation was not very obvious for a number of years, began at no very distant period to have a sensible influence. Besides opening the markets of England and of her foreign possessions to the products of Scotland, the removal of the seat of the legislature to London obliged an unusually large proportion of the Scotch nobility and gentry to reside partly in England, where they became acquainted with improved habits and modes of management; and acquired sounder ideas as to the relation between landlord and tenant than those that were then prevalent in Scotland.

But of all the political measures by which the agriculture of Scotland has been affected, none had so powerful or beneficial an influence as the act, passed in 1748, for the abolition of hereditary jurisdictions. In most counties, down to this period, a tenant, who had any dispute with a landlord, could only appeal either to that individual, or to some one else of the same class. The mischievous consequences of such a state of things are too obvious to require to be specified. It was fatal alike to the real interests of both landlords and tenants.

The act abolishing hereditary jurisdictions effectually obviated this abuse. The sheriff, or principal judge, in each county, has since been a salaried officer appointed by government, and selected from among the most eminent practising barristers. He has had no leanings in favour of one class or another; but has been equally ready to redress the grievances of all. And the fact of their generally holding under well-defined leases of a reasonable length, and having ready access to local judges distinguished for their ability and integrity, have given a feeling of independence, and a consequent energy and enterprise, to the Scotch tenants of our times, that was quite unknown to their ancestors.

About the middle of the century we begin to find symptoms of amendment. In Maxwell's *Practical Husbandry*, published in 1756, an improved system is laid down and inculcated. He pronounces it to be bad husbandry to take *two* consecutive corn crops; and he farther informs us, that the best farmers in East Lothian, after fallow, take a crop of wheat; after the wheat, peas; then barley; and after that oats. This is still very bad; though a material improvement on the practice described by Lord Belhaven. It shows too that, down to 1757, neither turnips, potatoes, clover, nor cultivated herbage of any sort, formed any part of the system, even of the best farmers in the Lothians. Lord Stair is said to have been the first who introduced the turnip culture into Scotland, having raised turnips on his estate of New Liston, near Edinburgh, about the middle of last century. But William Dawson, tenant of Frogden, in Roxburghshire, has un unquestionable title to be considered as the real father of the improved Scotch husbandry. Being a farmer, and cultivating for profit only, his example had infinitely more influence over his neighbours than it would have had had he been a landlord. He commenced raising turnips at Frogden in 1759. They were at first sown broadcast; but he set about drilling on a large scale in 1763, and his success stimulated others to adopt the same system. Dawson was also the first who introduced, not long after 1760, the practice of ploughing with 2 horses abreast, without a driver; nor is it easy to exaggerate the obligations the agriculture of Scotland owes to his sagacity and enterprise. But even in the Lothians the 4-horse plough continued in general use till about 1780; and it was not finally superseded by the 2-horse plough for several years after. In the other parts of the country, the former kept its footing even longer than in the Lothians. Nothing contributed more to pave the way for this important revolution in the method of ploughing than the signal improvements made upon the construction of the plough by Small, about 1770, to which we have already alluded.

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* The introduction of fallowing is ascribed to Thomas, sixth Earl of Haddington, and to a Mr. Walker, tenant of Beanston. The latter is said to have been led to try the practice by the representations of some Englishmen by whom he had been visited. His neighbours, when they saw what he was about, concluded that he was either insane or in bankrupt circumstances!—(*Somerville's Survey of East Lothian*, p. 29.)

From the close of the American war, the progress of improvement in Scotland has been rapid beyond all previous example. This has been owing to a variety of causes, but chiefly to the extraordinary progress made in commerce and manufactures since that period. In the distracted state in which Scotland had formerly been placed, these could make no considerable progress. But, after the battle of Culloden had extinguished the hopes of the Jacobites, and the abolition of hereditary jurisdictions had paved the way for the introduction of a regular system of government, a spirit of industry and enterprise began to be diffused on all sides. A good many branches of trade and manufacture carried on in England were introduced into Scotland soon after the peace of 1763; and not a few of them were prosecuted with much success. Their progress was checked for a while by the American war; but, after the treaty of Paris, in 1783, they acquired more than their former vigour: others were introduced; and all of them have since continued, with few, and those but transient interruptions, to advance with a rapidity that could not previously have been supposed possible.

This unprecedented extension of manufacturing and commercial industry occasioned a corresponding increase of wealth and population, especially in towns and villages. Improved accommodations of all sorts began to be in universal demand; and, besides the greater quantity of the inferior sorts of food required to supply the increasing population, a novel, or, at least, a vastly increased, market was opened for wheat and butchers' meat. These circumstances had the most astonishing influence over agriculture. The new and constantly increasing markets, established at their very doors, stimulated the farmers to put forth all their energies, and to avail themselves of discoveries and practices to which they had hitherto been total strangers. We believe, indeed, that we run little risk in affirming, that agriculture has made a more rapid progress in Scotland since 1760 or 1770, than it has ever made in any nearly equal period in any other civilised country.

But, in contrasting the progress of improvement in England and Scotland during the last 60 or 70 years, allowance should be made for the different situation of the two countries when the competition began. England, in 1770, was, as compared with Scotland, a highly improved country. When, therefore, the latter began to enter on the career of improvement, she had much greater scope for advancement, at the same time that she could avail herself of the example and experience of England.

There can, however, be no doubt that a good deal of the progress of Scotch agriculture, since the epoch referred to, is ascribable to other causes; among the most prominent of which may be specified the astonishing improvements made in the public roads, or in the means of communication among different districts: and it has, also, been partly owing to the absence of tithe and poor's rate; and, in a still greater degree, if not principally, to the habit, that has become universal in all the best cultivated districts of Scotland, of granting leases, with conditions hindering the exhaustion of the soil, and of a sufficient length to induce the tenant to make every possible exertion, and every profitable outlay.

The following statement of the comparative weight of the produce annually afforded under the system of farming followed in East Lothian, as described by Lord Belhaven, and that which is now followed, is taken from a paper by Mr. Oliver, of Lochend, near Edinburgh, one of the most intelligent and extensive practical farmers in the empire: —

"The mode of cropping at the former period (1723) was, first, peas; second, wheat; third, barley; fourth, oats; the produce being about three seeds, but, to prevent all cavil, say four seeds. This, taking the seed for each acre at 1 boll *, over a farm of 100 acres †, is 400 bolls. The quantity of straw for each boll of such a crop could not exceed 15 stones; which on 400 bolls gives 6,000 stones, or 42 tons 15¼ cwts. of straw, to be consumed by the stock and returned to the land in the shape of manure. But upon a farm of 100 acres, cultivated as at present; viz., a fourth turnips; a fourth wheat, or barley; a fourth clover or rye-grass, pastured, or made into hay and consumed on the farm; and a fourth oats, or wheat; the account would stand thus: — 50 acres of wheat, barley, and oats, at 8 bolls per acre, which, we are convinced, is not above the average crops of the best district of East Lothian (and such only was cultivated when Lord Belhaven wrote): this, allowing, as above, 15 stones of straw for each boll, gives 120 stones per acre; which, over 50 acres, makes in all 6,000 stones of straw, or 42 tons 15¼ cwts.; being equal to the quantity produced by the whole 100 acres under the old system. Now, suppose that the 25 acres of clover and rye-grass are made into hay (which,

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* One East Lothian boll of wheat was equal to nearly 4 bushels; a boll of barely to near 6 bushels.

† The Scotch acre, equal to 2,161 imperial acres, is here referred to.

however, is not the mode practised, nor the best mode for obtaining the greatest quantity of manure, and keeping up the fertility of the soil), and that each acre yields 200 stones, the total quantity will be 5,000 stones, or 35 tons 14$\frac{1}{10}$ cwts.; and add to this 500 tons turnip, being the produce of 25 acres, at 20 tons per acre, which is by no means above a fair average crop. Upon these data, the weight of materials produced annually for manure under the old and new systems will be as follows:—

“Old system,	Straw	6,000 stones,	42 tons	15¼ cwt.
“New sytem	Straw	6,000 —	42 —	15¼ cwt.
	Hay	5,000 —	35 —	14$\frac{1}{10}$ —
	Turnips	70,000 —	500 —	

“Thus, making the weight of materials to be converted into manure under the new system, in round numbers, 577 tons; while, under the old system, the quantity is only 42 tons, leaving a balance in favour of the new of 533 tons per annum, being *more than twelve times the whole quantity produced under the old!* Nothing more is necessary to show the superiority of the new system, in as far as *keeping up the fertility of the soil* is concerned: and upon this depends the progress of agriculture. And as to the question of comparative profit, it would be easy to show, from unquestionable data, that the new system is as superior to the old in this respect, as it is in the supply of manure; but this, we think, must be abundantly obvious to every one who contrasts the almost imperceptible advances made in agriculture, and in the accumulation of agricultural capital, for many centuries, with their extraordinry progress during the last 70 years, or since the new system was introduced.”

The farmers having generally obtained leases for 19 years, and frequently for a much longer period, for what the lands were worth when this system was beginning to be introduced, it is easy to see that, with such means of improvement in their hands, combined with the rise of prices, they could not fail of rapidly accumulating wealth; and we believe that the increase of capital in the hands of the farmers of Scotland, in the interval between 1780 and 1815, has never been equalled, in the same period, in any other old settled country. The heavy fall of prices at the end of the war, and the fluctuations that have since occurred, have, in some districts, occasioned the loss of a considerable quantity of capital. In other districts, however, there has been an increase; and, on the whole, we have no doubt that the farming capital of Scotland is as large at this moment as in 1815; while it has certainly gained materially in efficacy, or in productive power.

The improved thrashing machine, introduced about 1794, an instrument of the utmost importance in agriculture, was the invention of a Scotch mechanic of the name of Meikle.

Most of the commons and wastes that formerly existed in Scotland have been divided, and the greater number, at least in the lowlands, have been enclosed and cultivated. In this respect, the practice in Scotland is very superior to that in England. Instead of requiring, as is the case in the latter, a particular act of parliament for the enclosure and subdivision of each common, they have all been enclosed and subdivided, in Scotland, under the provisions of an act of the Scotch parliament, passed in 1695. This act is so very important, and at the same time so brief and comprehensive, that we subjoin it:—

Act concerning the dividing of Commonties, passed in the parliament of Scotland, 17th July, 1695.

"Our Sovereign Lord, with advice and consent of the Estates of Parliament, for preventing the discords that arise about commonties, and for the more easy and expedite deciding thereof in time coming, statutes and ordains, That all commonties, except the commonties belonging to the King and royal boroughs in burgage, may be divided at the instance of any having interest, by summons raised against all persons concerned before the Lords of Session; who are hereby empowered to discuss the relevancy, and to determine upon the rights and interests of the several parties concerned; and to grant commissions to sheriffs, stewards, bailies of regality and their deputies, or justices of peace, or others, for perambulating and taking all other necessary probation; which commissions shall be reported to the said lords, and the said processes ultimately determined by them: And, where mosses shall happen to be in the said commonties; with power to the said lords to divide these said mosses among the several parties having interest therein, in manner aforesaid: or in case it be instructed to the said lords that the said mosses cannot be conveniently divided, his Majesty, with consent aforesaid, statutes and declares, that the said mosses shall remain common, with free ish and entry thereto, whether divided or not; declaring, also, that the interest of the heritors having right in the said commonties, shall be estimate according to the valuation of their respective lands or properties; and which divisions are appointed to be made of that part of the commonty which is next adjacent to each heritor's property."

Had a similar act been passed in England, at the same period, it would have saved the proprietors of such commons as have been enclosed a great deal of money, and would have led to the cultivation of a much greater extent of waste land.

The introduction of the sheep-farming system into the Highlands has effected a radical change in the internal economy of the northern counties, and has been, on the whole, most advantageous. Under the old system, the population was collected in the arable districts in the glens, or valleys between the mountains, and along the banks of the lochs, or arms of the sea. Their habitations were usually clustered together in a sort of villages; the lands susceptible of tillage being sometimes cultivated in common; though they were more usually divided into small patches, or *crofts*, held by the occupiers, generally from year to year, sometimes from the proprietor, but more commonly from a middleman, or *principal tacksman*. Owing to the very limited extent of the low grounds in the glens, particularly on the western coast, and the torrents of rain by which they are frequently deluged, but little corn could be raised, even in the most favourable seasons; and the entire failure of the crops was a calamity of any thing but rare occurrence. Hence, the principal dependence of the occupiers was on their cattle, fed on the contiguous mountain pastures: and had they renounced all attempts at tillage, and appropriated their valleys to the production of winter food for their cattle, importing supplies of meal from the lowlands, their condition would have been much improved; but the petty tenants were too poor, too ignorant, too indolent, too firmly attached to old customs and habits, and too much occupied in schemes of illicit distillation, to attempt any innovation of this sort. They uniformly endeavoured to raise on their little patches of low ground bread for themselves and their families, and fodder for the use of their stock during winter. In this, however, they often failed; and when such was the case, men and beasts were exposed to all the evils of scarcity, and even famine.

Such a system was fitted only to perpetuate and extend the most abject poverty and barbarism. The population, as is always the case, where the land is held by cottiers, was decidedly redundant. The rents the occupiers paid were but trifling; but, though they had been themselves the owners of the land, their condition would not have been sensibly ameliorated. They had no capital with which to undertake any improvement; and though, during the greater part of the year, they had little or nothing to do, the smallness of their occupancies obliged them to keep a much greater number of horses than would have been required for larger farms. At length, however, the occurrence of circumstances similar to those that occasioned the extension of sheep-farming in England, in the reigns of Henry VII. and Henry VIII., led to its introduction in the Highlands. After hereditary jurisdictions had been abolished, and good order and a regular system of government were introduced into the northern counties, the landlords, finding they could no longer acquire distinction by the number of their vassals, became more than ever desirous to increase the rental of their estates. Under such circumstances, they could not help perceiving that the mode in which they were occupied constituted an effectual barrier to all improvement, and to any material increase of rent. The prejudices in which they had been educated hindered many of those who were the first to perceive the inconveniences of the old system from attempting to modify it; but these gradually lost their efficacy, and, at length, completely disappeared. It is to no purpose, however, to ascribe the overthrow of the cottier system in the Highlands to any undue preference of sheep-farming. The introduciion of this system determined the mode in which an inevitable change has been accomplished; but it did not bring it about. Though the hills and mountains north of the Forth had continued to be exclusively depastured by black cattle, the obvious advantage of clearing the glens of their petty occupiers, and of appropriating them to the production of winter food for the cattle, would have led to nearly the same results, in so far as the cottier population is concerned, that have resulted from the introduction of sheep. But it must not be supposed that black cattle have been banished from the Highlands; they have merely been confined to the pastures less suitable for sheep; while the greater attention paid to the selection and improvement of the breed, and the circumstance of the entire produce of the meadows and low grounds being reserved for their support in winter, makes it be generally concluded that the exports of cattle from the Highlands are about as great at present as at any former period; and supposing it to be so, it follows, that the vast quantities of wool and sheep annually furnished by the Highlands are so much added, through the change in the mode of occupancy, to the free available produce of the country! It would not, therefore, be easy to exaggerate the beneficial results of the sheep-farming system. Immense tracts of mountain land, that were formerly either wholly useless, or appropriated only to the depasturing of the half-starved oxen of the glens for a few months in summer, have been made, through its agency, considerably productive. The increase of food, and other accommodations thence resulting, has not been confined to any particular class or order. It has been a truly national benefit; and has redounded, despite the violence with which it was, in a few instances, forced upon the poor occupiers, as much to their advantage as to that of the landlords.

It has been repeatedly objected to the change now noticed, that it has depopulated the Highlands, and forced the inhabitants to seek an asylum in foreign countries; but it is hardly necessary to say, that a system of farming, which has added most materially to the supply of produce in a country, cannot, whatever other effects it may have, occasion any diminution of population. Now, no one doubts that this has been a consequence of the introduction of sheep-farming into the Highlands; so that the fallacy of the objections alluded to is seen at a glance. Perhaps, however, it may be thought, that though, in consequence of the increase of exportable produce from the Highlands, the population of the other parts of the empire may have been increased, the inhabitants of that district may, notwithstanding, have been diminished: but, provided the population of the empire be not injuriously affected, its distribution is of inferior consequence. In point of fact, however, there has been no falling off in the population of the Highlands; on the contrary, it has increased very decidedly since the epoch when sheep-farming began to be introduced. This is obvious from the following returns of the population of the principal sheep counties:—

Counties.	Population, 1755.	Population, 1801.	Population, 1831.
Argyle - - -	63,291	71,859	101,425
Inverness - -	64,656	74,292	94,797
Ross and Cromarty -	47,656	55,343	74,820
Sutherland - -	20,774	23,117	25,518
Totals - -	196,377	224,611	296,560

Hence, instead of declining, it appears that the population of the principal Highland counties has increased 100,183 since 1755, and 71,949 since 1801! And this, after all, is only what a more unprejudiced inquiry into the circumstances would have led any one to anticipate. The inhabitants, instead of being scattered over the country, have been collected into villages and towns; and, from being lazy half-employed petty farmers and cottiers, numbers have been converted into comparatively industrious artisans, fishermen, &c. The proprietors, in consequence of the immense increase of their rentals, have been enabled and stimulated to undertake the most expensive improvements; and their efforts have been so well seconded by the new class of tenantry, that a totally different appearance has been given to the entire country. There is, also, a decidedly greater demand for labour, and more people employed than at any former period; with a proportional increase in the quantity of work done, and of the products brought to market. The condition of the people has, at the same time, been signally improved; and, instead of those frequently recurring famines that used to spread disease and death over large portions of the country, scarcity is now as little prevalent in most Highland districts as in the lowlands.

5. *Present State of Agriculture.*—It was supposed by many, that the extraordinary improvement in the agriculture of Scotland, during the late war, being mainly owing to the high prices that then prevailed, the heavy fall of prices that took place subsequently to the renewed intercourse with the Continent in 1814, would check its further progress. Luckily, however, this anticipation has not been realised. No doubt, the shock occasioned by the fall alluded to was as severe as it was sudden and unlooked for by most persons; and, in the first instance, was productive of much distress, and the ruin of many landlords in embarrassed circumstances, and of tenants paying money rents, calculated on the footing that the high prices that had prevailed during the previous half dozen years would be permanent. This, however, was not the situation of the great body of the agriculturists; and, while the fall was comparatively little felt by them, it was highly advantageous to the manufacturing and commercial classes; no inconsiderable portion of the wonderful progress made in manufactures and commerce since 1814 being clearly ascribable to the fall in the cost of necessaries. It is impossible, too, that agriculture can be long depressed where manufactures and commerce are flourishing; and in a brief period it began to revive. The property tax, which pressed severely on the land, was struck off; rents, where necessary, were reduced; and the farmers exerted themselves to meet the new order of things by fresh efforts of industry, and by proscribing every useless expense.

These efforts have been powerfully promoted by the formation of improved means of communication. We have already had occasion to exhibit some of the effects of the opening of new roads (*antè*, p. 306., &c.); and the establishment of steam-packets has been quite as important. They have brought most of the great markets in the kingdom within reach of the occupiers in some of the remotest districts. The farmers of the east coast of Scotland, as far north as the Moray Frith, are now able to send up *full-fed cattle and sheep* to London at a fourth part of the expense, and in a tenth part of the time, that was formerly required to send them up half fed to the Norfolk fairs; at the same time that a new and boundless market is created for all other sorts of agricultural produce. The same machinery has opened an equally easy access to the great markets of Liverpool and Manchester for the farmers of Dumfriesshire, Galloway, Ayrshire, and generally of all the west of Scotland. The advantages accruing from this have been, both directly and indirectly, of the greatest importance; and, in some places, have more than countervailed the fall of prices.

The recent introduction of bone manure into Scotland has also been of the very highest value. Bone mills are now erected in most parts of the country; and large quantities of dust are imported. Its influence in increasing the crops of turnips and corn, and, consequently, the supply of butcher's meat and of farm manure, has been quite astonishing. The facility, too, of its carriage has permitted many hilly and comparatively inaccessible districts to be improved at a comparatively small cost.

Next to the introduction of bone manure, or, perhaps, before it, the extension of drainage, and principally of the newly imported practice of furrow draining, has been the greatest of the recent improvements made in Scotch agriculture. Large tracts, that were formerly comparatively unproductive, have been, through its means, rendered capable of bearing heavy crops. Every where, indeed, a spirit of improvement is diffused; and the land is not only rendered more suitable for the production of most sorts of produce, but is better cultivated, and subjected to rotations better suited to its capacities. No doubt, therefore, the quantity of corn, butcher's meat, &c. at present raised in Scotland vastly exceeds the quantity raised in 1814, or at any former period; and there are good grounds for thinking that prices might be reduced, even below their present low level, without materially retarding the progress of agriculture.

CHAPTER II.—MINES AND MINERALS.

THE mineral riches of Great Britain, *if not superior*, are at least equal to those of any other country. We cannot, it is true, boast of mines of gold *or silver;* but we possess what is of still more importance to a manufacturing nation, an all but inexhaustible supply of the most excellent coal. Iron, the most useful of all the metals, is found in the greatest abundance, and of an exceedingly good quality, in most parts of the empire. Our tin mines are the most productive of any in Europe; and we have also very productive and valuable mines of copper, lead, manganese, &c. Our salt springs, and beds of fossil salt, are alone sufficient to supply the whole world for an indefinite period.

The most valuable minerals are situated in the western and northern parts of England; and in the southern and middle parts of Scotland. The English mines are by far the most important. Were a straight line drawn from the Isle of Portland, in Dorsetshire, to Rugby in Warwickshire, and thence to Hartlepool, on the coast of Durham, the country to the east of it would be found to be destitute of coal, copper, tin, lead, salt, &c. Iron is, indeed, found in various places to the eastward of the line now mentioned; but, owing to the want of coal, it is not wrought. This district may, therefore, as compared with the other parts of the country, be said to be destitute of minerals; and, to a considerable extent, also, of those branches of industry for the successful prosecution of which an abundant supply of minerals is necessary.

We begin our notices of the different minerals with that of coal, by far the most important and valuable of them all.

1. COAL.—It is hardly possible to exaggerate the advantages

England derives from her vast beds of coal. In this climate, fuel ranks among the principal necessaries of life; and it is to our coal mines that we owe abundant and cheap supplies of so indispensable an article. Had they not existed, wood must have been used as fuel; and it is quite impossible that any attention to the growth of timber could have furnished a supply equal to the wants of the present population of Great Britain, even though a large proportion of the cultivated land had been appropriated to the raising of trees. But, however great and signal, this is not the only advantage we derive from our coal mines: they are the principal source and foundation of our manufacturing and commercial prosperity. Since the invention of the steam-engine, coal has become of the highest importance as a moving power; and no nation, however favourably situated in other respects, not plentifully supplied with this mineral, need hope to rival those that are, in most branches of manufacturing industry. To what is the astonishing increase of Glasgow, Manchester, Birmingham, Leeds, Sheffield, &c., and the camparatively stationary or declining state of Canterbury, Winchester, Salisbury, and other towns in the south of England, to be ascribed? It cannot be pretended, with any show of reason, that the inhabitants of the former are naturally more ingenious, enterprising, or industrious, than those of the latter. The abundance and cheapness of coal in the north, and its scarcity, and consequent high price, in the south, is the real cause of this striking discrepancy. The citizens of Manchester, Glasgow, &c. are able, at a comparatively small expense, to put the most powerful and complicated machinery in motion; and to produce results quite beyond the reach of those who have not the same command over coal, or, as it has been happily defined, "hoarded labour." Our coal mines have been sometimes called the *Black Indies;* and it is certain that they have conferred a thousand times more real advantage on us than we have derived from the conquest of the Mogul empire, or than we should have reaped from the dominion of Mexico and Peru. They have supplied our manufacturers and artisans with a power of unbounded energy and easy of control; and enabled them to overcome difficulties insurmountable by those to whom nature has been less liberal of her choicest gifts.

Consumption of Coal in Great Britain. — It is uncertain when coal first began to be used amongst us as fuel: probably it did not long precede the 13th century. In 1281, however, Newcastle is noticed as having some trade in this article. In the reign of Edward I. its use, in London, was prohibited, because of the supposed injurious influence of its smoke. This prohibition was renewed at several subsequent periods, but to no purpose. Experience showed that the smoke was not deleterious; while the growing scarcity, and consequently, increased price, of timber, and the superiority of coal as an article of fuel, secured its ascendency in despite of every obstacle. Since the reign of Charles I., it has become almost the only description of fuel used in London, and in most other towns and districts throughout the kingdom.

The consumption of coal in Great Britain is immense. It was recently estimated by Mr. Taylor, an experienced coal owner and engineer, at 15,580,000 tons, exclusive of the exports to foreign countries.

We suspect, however, that this estimate is a great deal under the mark. The yearly importation of water-borne coal into the port of London amounts, at present, to about 2,630,000 tons. The population of the district that derives its principal supply from this source amounts to about 2,400,000, or 2,500,000, giving an annual consumption of nearly a ton to each individual. There are, no doubt, several very extensive gas works, breweries, &c. in London, in which large quantities of coal are consumed; and the population may be reckoned more opulent, and, consequently, able to consume more fuel than that of most other parts of the kingdom. But, on the other hand, the comparatively high price of coal in the metropolis and its vicinity reduces its consumption by the middle and lower classes considerably below the level of the consumption of the same classes in Lancashire and other coal counties. The accurate researches of Dr. Cleland show that, in 1831, when the population was 202,000, the consumption of coal in Glasgow amounted to 437,000 tons. We believe we shall make a liberal allowance for the coal consumed in cotton factories, and other public works of a description not carried on in London, if we estimate it at 225,000 tons; which would leave 212,000 tons, or more than a ton for each individual for the domestic consumption of the city. — (*New Statistical Account of Scotland*, No. 7. p. 162.) On the whole, therefore, we should be disposed to think that, including the consumption of coal in gas-works, breweries, distilleries, brick-works, soap-works, sugar-refineries, bakehouses, and such sort of businesses as are carried on in the valley of the Thames, the consumption of Great Britain may be estimated at nearly the same rate, or at about a ton of coal for each individual, exclusive of the consumption in iron-works and other great branches of manufacture. This would give above 18,000,000 tons for what may be called the domestic consumption of the island; though, to be within the mark, we shall take it at only 17,000,000 tons. The domestic consumption of coal in Scotland, in 1813, is estimated in the *General Report* (vol. i. p. 66.), at 2,000,000 tons; the population being, at the time, under 1,900,000. But to this quantity many very large additions have to be made.

The quantity of iron annually produced in Great Britain may be taken at 800,000 tons; and the quantity of coal required, at an average, to produce each ton of iron, including that used by engines, &c., may be estimated at 5 tons; giving a total of 4,000,000 tons consumed in the making of iron. According to Mr. Kennedy, the quantity of coal consumed in the cotton manufacture, in 1817, was upwards of 500,000 tons; and the manufacture has since more than doubled; so that, allowing for greater economy, we may fairly estimate the consumption of coal in the cotton trade at 800,000 tons a year. Its consumption in the woollen, linen, and silk trades cannot be less than 600,000 tons. The quantity of copper ore annually smelted in Great Britain amounts to about 185,000 tons; and it is supposed that about 2½ tons of coal are required to smelt each ton of ore, making the total consumption in this department equal to 462,500 tons. It is generally believed that the brass and copper manufactures require nearly as much coal as the copper smelting. In the salt-works of Cheshire, Worcestershire, &c. the consumption is probably not under, if it do not exceed, 350,000 tons. The consumption in lime works may, it is believed, be estimated at 500,000 tons. It would appear, therefore, that the total annual consumption of coal in Great Britain may be moderately estimated as follows: —

	Tons.
Domestic consumption, and smaller manufactures, (1833)	17,000,000
Production of pig and bar iron	4,000,000
Cotton manufacture	800,000
Woollen, linen, silk, &c.	600,000
Copper smelting, brass manufactures, &c.	925,000
Salt-works	350,000
Lime-works.	500,000
	24,175,000
Exports to Ireland	900,000
Ditto to colonies and foreign parts (1837)	1,113,000
Total	26,188,000

In this estimate no allowance has been made for the coal consumed in the manufacture of hardware and cutlery at Birmingham, Sheffield, &c.; so that for this, among other reasons, we do not think it can be justly accused of exaggeration.

If we suppose that the above quantity of 26,000,000 tons costs the consumer, at an average, 8*s.* a ton, it will be worth in all 10,400,000*l.* a year!

Supply of Coal in England. — The importance of coal as a necessary of life, and the degree in which our superiority in arts and manufactures depends upon our obtaining supplies of it at a cheap rate, has naturally attracted a good deal of attention to the question, as to the period when the exhaustion of the coal mines may be anticipated. But the investigations hitherto made as to the magnitude and thickness of the different coal-beds, and the extent to which they may be wrought, are too vague and unsatisfactory to afford grounds for forming any thing like a tolerably near approximation to a solution of this question. But such as they are, they are sufficient to show that many centuries must elapse before posterity can feel any serious difficulties from a diminished supply of coal. According to Mr. Taylor, to whose estimate of the consumption of coal we have already referred, the coal-fields of Durham and Northumberland are adequate to furnish the present annual supply for more than 1,700 years. We subjoin Mr. Taylor's estimate. —

Estimate of the Extent and Produce of the Durham and Northumberland Coal-fields.

	Sq. Miles.
DURHAM.	
From South-Shields southward to Castle Eden, 21 miles; thence westward to West Auckland, 32 miles; north-east from West Auckland to Eltringham, 33 miles: and then to Shields, 22 miles; being an extent or area of	594
NORTHUMBERLAND.	
From Shields northward, 27 miles, by an average breadth of 9 miles	243
Carried forward	837

		Sq. Miles.
Brought forward		837
Portion excavated, in Durham, on Tyne, say	39	
——— on Wear	40	
	79	
in Northumberland, say 13 miles by 2	26	
		105
		732

Estimating the workable coal strata at an average thickness of 12 feet, the contents of 1 square mile will be 12,390,000 tons and of 732 square miles	9,069,480,000 Tons.
Deduct 1-3d part for loss by small coal, interceptions by dikes, and other interruptions	3,023,160,000
Remainder	6,046,320,000

This remainder is adequate to supply the present vend from Newcastle, Sunderland, Hartley, Blyth, and Stockton, of 3,500,000 tons, for a period of 1,727 years.

It will be understood that this estimate of the quantity of coal in Durham and Northumberland can only be an approximation, especially as the south-eastern coal district of Durham is yet almost wholly unexplored; but the attempt is made, in the hope of satisfying the public that no apprehension need be entertained of this valuable mineral being exhausted for many future generations.

There is also a considerable extent of coal-field in the northern and south-western districts of Northumberland; but the foregoing comprises that which is continuous and most suitable and available for exportation. — (*Lords' Report*, 1829, p. 124.)

Dr. Buckland, the eminent geologist, considers this estimate as very greatly exaggerated; but in his examination before the committee of the House of Commons, he quotes and approves a passage of Bakewell's Geology, in which it is stated, that the coal-beds in South Wales are alone sufficient to supply the whole present demand of England for coal for 2,000 years. The passage is as follows: —

"Fortunately we have in South Wales, adjoining the Bristol Channel, an almost exhaustless supply of coal and iron-stone, which are yet nearly unwrought. It has been stated, that this coal-field extends over about 1,200 square miles; and that there are 23 beds of workable coal, the total average thickness of which is 95 feet; and the quantity contained in each acre is 100,000 tons, or 65,000,000 tons per square mile. If from this we deduct one half for waste, and for the minor extent of the upper beds, we shall have a clear supply of coal equal to 32,000,000 tons per square mile. Now, if we admit that 5,000,000 tons from the Northumberland and Durham mines is equal to nearly one third of the total consumption of coal in England, each square mile of the Welsh coal-field would yield coal for 100 years consumption; and, as there are from 1,000 to 1,200 square miles in this coal-field, it would supply England with fuel for 2,000 years, after all our English coal mines are worked out." — (See also Mr. Bakewell's art. on the *Geology of England*, *antè*, vol. i. pp. 85—90.)*

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* For further details as to the consumption and supply of coal, see the *Treatise on the Collieries and Coal Trade*, Lond. 1835, p. 416—463.

It is unnecessary to add any thing more, to show the futility of the apprehensions of the speedy exhaustion of our coal mines. But, though we were shut out from South Wales, and though the supply in Northumberland and Durham were far more limited than it really is, we should have nothing to fear. In the West Riding of Yorkshire there are many extensive coal-beds, hitherto wholly untouched. In Staffordshire the coal-beds are of immense magnitude, that round Dudley being no less than 30 feet thick! It is true that, in the present slovenly mode of working the mines, more than *two thirds* of the coal is left in the mine and wasted (*Bakewell's Geology*, 4th ed. p. 183.); but it is abundantly certain that, were there any thing like a scarcity of coal apprehended, this wasteful practice would be put an end to, and means would be found of totally exhausting the mines. There are also very extensive coal-fields in Flintshire and Denbighshire; so that for all practical purposes, and in relation to such periods of time as may be supposed to come within the scope of the remotest schemes and combinations, our supply of coal may be considered as infinite.

Supply of Coal in Scotland. — The previous statements as to the consumption of coal apply to Great Britain; but those as to its supply are applicable only to England. We should, however, have a very incorrect notion of the coal-fields of Great Britain, if we omitted to notice those of Scotland; they are of great extent and value; and would of themselves suffice to furnish the whole empire with an adequate supply of coal for a very long series of years. We borrow the following details from the *General Report of Scotland*: —

" Coal is found in several districts of Scotland, as in Dumfriesshire, and Roxburghshire, in the more southern counties; but the great field of Scotch coal stretches from S. W. to N. E., across the centre of the kingdom; and is to be found in greater or smaller quantities, in the shires of Haddington, Edinburgh, and Linlithgow (commonly called the Lothians), Stirling, Clackmannan, Kinross, Fife, part of Perth, Ayr, Renfrew, Lanark, Dunbarton, and part of Argyll. Its average breadth is 33 miles, and its length on the mainland of Scotland, is 98 miles; consequently, its total area is 3,234 square miles. From this, deducting 360 miles for the space covered by the Frith of Forth, there will be left 2,874 square miles of territory, in most parts of which coal is found at different depths, and of various qualities; and in 600,000 acres of which, it is computed, it may be worked to advantage. The districts through which this great field of coal extends are by far the most populous in the kingdom, containing above 2-5ths of the people in less than 1-10th part of the space; and the soil in general is well cultivated. This improved cultivation is, in no small degree, to be attributed to the advantages arising from the extensive distribution, easy conveyance, and moderate price of coal; for wherever fuel is most abundant, there the population is greatest, and manufactures, commerce, and agriculture, mutually aid and stimulate each other.

" The depth of coal varies, but in general it seems to be rather nearer the surface in the western than in the eastern division of the country. There is also a great variety in the number of its seams or strata, and their thickness. The most extraordinary thickness in the island is at Quarrelton, near Paisley, where five contiguous seams are upwards of 50 feet thick. Seams less than 18 inches are not deemed equivalent to the expense of working. — (*General Report of Scotland*, i. p. 64.)

Number of Persons engaged in the British Coal Trade. — Mr. Buddle, of Wallsend, an extremely well informed coal engineer, gives the following estimate of the number of persons engaged in the different departments of the coal trade on the Tyne and Wear, in the conveyance of coal to London, and in the London coal trade: — "I hold a paper in my hand, stating the number of people employed in the coal trade in each department. I would beg to observe, the returns from the Tyne are official documents; from the Wear I have no returns, but it is by an approximate calculation. The number of persons employed under ground on the Tyne are, —men, 4,937; boys, 3,554; together, 8,491: above ground, — men, 2,745, boys, 718; making 3,463: making the total employed in the mines above and below ground, 11,954, which, in round numbers, I call 12,000, because I am pretty sure there were some omissions in the returns. On the river Wear, I conceive there are 9,000 employed; making 21,000 employed in digging the coal, and delivering it to the ships on the two rivers. From the best calculations I have been able to make, it would appear that, averaging the coasting vessels that carry coals at the size of 220 London chaldrons each vessel, there would be 1,400 vessels employed, which would require 15,000 seamen and boys. I have made a summary. There are seamen 15,000; pitmen and above-ground people employed at the collieries, 21,000; keel-men, coal-boatmen, casters, and trimmers, 2,000; making the total number employed in what I call the northern coal trade, 38,000. In London, whippers, lightermen, and so forth, 5,000; factors, agents, &c., on the coal exchange, 2,500; 7,500 in all, in London. Making the grand total in the north country and London departments of the trade, 45,500. This does not, of course, include the persons employed at the outposts in discharging the ships there."

We regret our inability to lay any similar estimates before our readers of the number of persons engaged in the coal trade in other places; but in the absence of more authentic statements, the following details may not, perhaps be unacceptable. The annual trade from the Tyne and the Wear, including the home consumption, is about 4,200,000 tons, or about one fifth part of the entire quantity of coal consumed in, and exported from, Great Britain. Now, as 21,000 persons are engaged above and below ground on the Tyne and the Wear, and in carrying the coal to the ships, it seems reasonable to conclude, that there will be in Great Britain five times this number, or 105,000 persons, engaged in the raising of coal and in its land carriage; and adding to these 30,000 for the seamen, wharfingers and others employed in the trade from the Tyne, the Wear, and the Tees, to the south, and from Whitehaven, Liverpool, &c., to Ireland, and the trade by sea with other places, we get 135,000 as the total number of persons directly engaged in the British coal trade. We do not of course put forth this as an accurate estimate: we have stated the grounds on which it is made; and it is merely to be regarded, in the absence of more authentic information, as an approximation to the real state of the case.

Gradation of Workmen in Coal Mines. — There are trap-door keepers, boys who attend to the doors, to open and shut them to let the workmen pass to and from the working places; these doors are necessary to keep the current of the air to the front of the working places, and thus sweep off the gas which is evolved from the coal. The next class in age and size is the rolley drivers, who are stouter boys, generally about 12 to 14 years of age; those boys are the drivers of the horses which convey the coals from the crane to the bottom of the shaft. There is another class of boys called putters, who are stronger lads, and whose ages vary from 15 to 22 or 23 years; those lads are employed in bringing the corves filled with coal from the hewers working at the face of the bords, or the pillars working to the crane, where they are lifted to the trains and put upon the rolleys, which bring them to the bottom of the shaft. The next class is the hewers, who are the producers of the coal. The next gradation in rank is the deputy, who is under the immediate direction of the overman; this man has the management of the pit, and the care of the miners, in the absence of the overman. The next in station is the overman, who gives the daily directions to the miner as to the working of the mine; he takes an account of their daily earnings, and sees that each working place is properly ventilated before the miner is permitted to go to it. Then the underviewer, whose business it is to descend the mine daily, and see that all is right in the ventilation and general management; he consults with the overmen, and gives them such directions as he sees necessary, if nothing occurs of so much moment as to require his previous communication with the viewer, and to take his directions as to what may be necessary for the management of the mine. The viewer is the chief superintendent."—(*Report of* 1835 *on Accidents in Mines*, p. 87.)

Mode of paying Colliers' Wages, &c. —Colliers are always paid by the piece, and consequently their wages, although at the same rate per chaldron, vary according to the quantity of work they have to do; and it is difficult to form an average, they vary so very considerably; they have varied from 14*s*. a week to, in some instances, 40*s*. The colliers can earn up to 5*s*., or even more, per day; but there is not full employment for them; they sometimes do not earn more than half that sum; 2*s*. 6*d*. is the certain wages that they are hired to receive from their employers, whether they are employed or not; that is, consequently, a tax on the coal owner, during the suspension of his colliery from any accident. The men have the option of finding work elsewhere; but if they cannot do this, they may call upon their master to pay them 14*s*. a week; it was 15*s*. a week till 1828.

Accidents in Coal Mines. — These, we regret to say, are very frequent. They arise principally from explosions of inflammable gas, but partly also from the presence of carbonic acid gas, or choke damp, and partly from other causes. The returns of these casualties are very far from complete; but the committee of the House of Commons appointed to inquire into the subject, in 1835, state, that defective as the returns are, they show that 2,070 persons have lost their lives in coal mines within the previous 25 years. While the committee was sitting, an explosion took place in one of the northern coal mines, by which 101 men and boys were destroyed in an instant! The report of the committee serves rather to show the dangerous nature of the evil to be contended with than any thing else. In many instances, not one of those engaged in mines that have exploded has survived to tell how the accident arose; and the causes of explosions, and the means of obviating them, have not been subjected to the continued or searching investigation of scientific men. It appears that, during the 18 years that have elapsed since the introduction of Sir Humphrey Davy's lamp, decidedly more accidents have taken place in the northern mines than during the previous 18 years. This, however, is not to be ascribed to the instrument not realising the expectations of its illustrious inventor, but to the fact of very dangerous, or, as they are expressively called, "fiery mines," being wrought by its means, that must otherwise have been long ago abandoned. It is, however, clearly established that, under certain circumstances, and especially when exposed to a current of air, the safety lamp is no protection at all. As matters now stand, all the more dangerous mines require in their working a degree of vigilant and continuous attention, that can hardly be expected from ordinary workmen, and especially from boys. The smallest inattention, the placing a lamp where it should not be placed, the closing of a door that ought not to be closed, or the opening of one that ought to be kept shut, the accidental striking of a spark, or any such occurrence, may occasion an explosion, and the instant death of hundreds.

At present, it would seem to be the opinion of the most experienced miners, that *efficient ventilation* is the only thing to be depended on. But the statements in the report go to show, what we have been otherwise well assured of, that this indispensable security is, in numerous instances, too little attended to.

The question whether the legislature should interfere in such a case is one of much difficulty, and involves various considerations. Certainly, however, it does appear to us that the working of "fiery," or unusually dangerous mines, ought not to be permitted till they have been so ventilated, or otherwise secured, that the risk of danger may be obviated with ordinary attention. To this extent, at least, government would seem to be justified in interfering. It is useless to trust any thing to the disinclination of the pitmen to engage in dangerous mines. By daily exposure to danger they become habituated to and careless about it; and, besides, they are apt to trust implicitly to the reports of "viewers" and others, who are quite as much interested in getting the coal brought cheaply to the pit mouth as in the security of the mine.

But before resorting to other means, it would be well, in the first place, to see whether the resources of science might not be made to yield greater security. And, on this ground, we think that a commission, consisting partly of eminent scientific men, and partly, though in an inferior degree, of the most skilful mining engineers, might be advantageously appointed to inquire into the state of the mines, in the view of preventing accidents, and of increasing the security and comfort of the miners.

Profits of Coal Mining. — Instead of the business of coal mining being, generally speaking, an advantageous one, it is distinctly the reverse. Sometimes, no doubt, large fortunes have been made by individuals and associations engaged in this business; but these are rare instances. The opening of a mine is a very expensive and hazardous operation, and of very uncertain result. Collieries are exposed to an infinite number of accidents, against which no caution can guard. Besides explosions, which are every now and then occurring from the carelessness of the workmen, and other contingencies, mines are very liable to be destroyed by *creeps*, or by sinking of the roof, and by drowning, or the irruption of water from old workings, through fissures which cannot be seen, and, consequently, cannot be guarded against. So great, indeed, is the hazard attending this sort of property, that it has never been possible to effect an insurance on a coal-work against fire, water, or any other accident.

Mr. Buddle, who is intimately acquainted with the state of the coal-trade, informed the committee of the House of Lords, that "although many collieries, in the hands of fortunate individuals and companies, have been, perhaps, making more than might be deemed a reasonable and fair profit, according to their risk, like a prize in a lottery, yet, as a trade, taking the whole capital employed on both rivers, he should say that certainly it has not been so." — (*First Report*, p. 56.) Again, being asked, "What have the coal owners on the Tyne and Wear, in your opinion, generally made on their capital employed?" he replied, "According to the best of my knowledge, I should think that *by no means* 10 *per cent. has been made at simple interest, without allowing any extra interest for the redemption of capital*." — (p. 57.)

Irish Coal Mines. — There are mines of coal in Ireland, at Ballycastle, on the north coast of Antrim; at Arigna in Leitrim; at Castle-Comer in Kilkenny, and in some other places. The mines now mentioned are all wrought, but not to any considerable extent. The quality of the Irish coal is, in general, bad; and we agree in Mr. Wakefield's opinion, that "*there is no vein of coal yet discovered in Ireland which can come into general consumption*." — (*Account of Ireland*, vol. i. p. 621.) Almost all the coal used in Dublin, Belfast, and other towns, is imported from England and Scotland.

Duty on Coal. — A duty on *sea-borne* coal was imposed in the reign of William III., and continued till 1830. A duty of this sort fell, of course, principally on London and the southern and south-eastern counties, and was not at all felt in the coal districts, or in those places to which coal could be conveyed by inland carriage! It is impossible, in fact, to imagine a more partial, unequal, and oppressive impost. At the period of its repeal it amounted to 6*s.* a chaldron, and produced about 900,000*l.* a year. Duties appropriated for local purposes are still charged on the coal imported into London and some other ports. In 1837, as already stated, the entire importation of coal into London amounted to 2,629,321 tons. Of this, a small quantity was brought by canal. We subjoin

An Account of the Quantity of Coals brought Coastwise, and by Inland Navigation, into the Port of London, during the year 1836, comparing the same with the Quantities brought during the Years 1834 and 1835.

Ships.			Ports whence Shipped.	Tons.		
1834.	1835.	1836.		1834.	1835.	1836.
3,625	3,900	3,757	From the Port of Newcastle - -	1,142,903	1,266,755	1,235,406
2,036	2,182	2,542	— Sunderland - -	569,105	629,554	743,849
1,007	966	1,064	— Stockton - -	221,971	230,174	268,222
248	251	285	— Blythe and Seaton Sluice -	64,268	65,046	71,775
176	249	157	From Leith, Inverkeithing, Kirkaldy, and other parts of Scotland	39,487	40,955	22,674
135	158	128	From Swansea, Llanelly, Milford, and other parts of Wales - -	33,200	38,567	35,237
177	257	225	From Hull, Goole, Gainsborough, and other places in Yorkshire -	17,751	27,761	21,189
—	—	—	Quantity which passed the Boundary Stone on the Grand Junction Canal, at Grove Park, Herts, and on the River Thames, at Staines	1,863	1,004½	1,199
—	7,404	7,958	Total -	2,080,547	2,299,816½	2,399,551½

Exports. — The coal exported in 1837 amounted to 1,113,610 tons, the duty on which produced 10,616*l.* All coal exported to countries having reciprocity treaties with Great Britain is charged with a duty of 10 per cent. *ad valorem*; when exported to a colony it is free. Holland, Germany, France, the British North American and West Indian Colonies, and the United States, are the principal foreign markets for British coal.

2. Iron. — We are ignorant of the period when iron began to be made in England; but there is authentic evidence to show that iron-works were established by the Romans in the Forest of Dean, in Gloucestershire, and in other parts of the kingdom.* They were also established, at an early period, in Kent and Sussex; these counties being well supplied, not only with iron ore, but (which was, at the time, of still more importance) with timber, the only species of fuel that was then used in the furnaces. It is to this latter circumstance that the slow increase in the production of iron in England, during a lengthened period, is to be ascribed. Complaints were very early made of the destruction of timber by the iron works; and in the reign of Elizabeth, when an unusual demand for timber for the navy, and for merchant vessels also took place, the decrease of timber excited a great deal of attention. At length, in 1581, an act was passed prohibiting the manufacturers of iron from using any but small wood, and from establishing any new works any where within 22 miles of the city of London, and 14 miles of the river Thames, and in several parts of Sussex specified in the act. Soon after this Edward Lord Dudley invented a process for smelting iron ore with pit-coal instead of timber; and it is not possible, perhaps, to point out another invention that has been more advantageous. The patent which his Lordship obtained in 1619, was exempted from the operation of the act of 1623, (21 James I. c. 23.), setting aside monopolies; but though, in its consequences, it has

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* *Pennant's Wales*, ed. 1810, vol. i. p. 89.

proved of immense value to the country, the works of the inventor were destroyed by an ignorant rabble, and he was well nigh ruined by his efforts to introduce and perfect his process.* The invention seems, in consequence, to have been for many years almost forgotten. The complaints of the destruction of timber continued; so much so that, in 1637, the exportation of iron without license was prohibited, and fresh restrictions were laid on the felling of timber. But the evil could not be abated by such means; and, in the early part of last century, complaints of the destruction of timber by the iron-works became more prevalent than ever, and their total suppression began to be contemplated as a lesser evil than the continued decrease of the stock of timber. At this period more than two thirds of the iron made use of was imported, and the condition of the manufacture was most unprosperous. But the growing scarcity and high price of timber, coupled with the increasing demand for iron, at last succeeded in drawing the attention of some ingenious persons to Lord Dudley's process; and about 1740 iron was made at Colebrook Dale, and one or two other places, by means of pit-coal, of as good a quality as that made with timber. From this period the business steadily increased; at first, however, its progress was comparatively slow, and the furnaces of Kent and Sussex were not wholly relinquished for more than 30 years after iron began to be largely produced by means of pit-coal. The great demand for iron occasioned by the late war, and the obstacles which it threw in the way of supplies from abroad, gave the first extraordinary stimulus to the manufacture, which has now become of vast importance and great value. In 1740, the quantity of pig-iron made in England and Wales amounted to about 17,000 tons, produced by 59 furnaces. Since this epoch, the increase is believed to have been as follows; viz.: — in 1750, 22,000 tons; in 1788, 68,000 tons, produced by 85 furnaces; in 1796, 125,000 tons, produced by 121 furnaces; in 1806, 250,000 tons, produced by a 169 furnaces; and in 1820, about 400,000 tons were produced, but there is no account of the number of furnaces. From extensive inquiries made by government and others connected with the iron trade during several years previously to 1832, the following statements have been deduced. They exhibit the districts in which iron is made, the number of furnaces, and the total quantity produced in 1823, 1825, 1828, and 1830: —

Districts.	Number of Furnaces.								Tons of Iron produced.			
	1823.	1825.			1828.			1830.				
	Total.	Total.	In Blast.	Out.	Total.	In Blast.	Out.	Total.	1823.	1825.	1828.	1830.
South Wales -	72	109	80	27	100	89	11	113	182,325	230,412	279,512	277,645
Staffordshire -	84	108	80	27	120	95	25	123	133,590	182,156	219,492	212,604
Shropshire -	38	49	36	13	48	31	17	48	73,418	89,596	81,224	73,418
Yorkshire -	26	34	22	12	34	17	17	27	27,311	39,104	32,968	27,926
Scotland -	22	25	17	8	25	18	8	27	24,500	33,540	37,700	37,500
Derbyshire -	15	19	14	5	18	14	4	18	14,038	22,672	22,360	17,999
North Wales -	20	14	8	6	19	12	7	20	12,000	17,756	25,768	25,000
Forest of Dean		14	-	5	2	1	1		-	-	2,600	
Various - -			-		1	1	-		2,379	-	1,500	5,327
Ireland - -		2	2	-	-	-	-		-	5,000		
Totals -	277	374	259	103	367	278	90	376	469,561	618,256	703,184	678,417

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* *Report of Committee of House of Commons on Patents*, p. 168, &c.

The price of pig-iron had sunk in 1832 so low as 4*l.* 10*s.* a ton; and, as this was not a price at which some of the works could be carried on with a profit, it was generally supposed that a good number of furnaces would have to be put out of blast. Owing, however, to the great increase of demand in consequence of the construction of railways and other public works, prices rose, in 1835, to 6*l.*, without any diminution of the number of furnaces; and they are now 8*l.* per ton, though the quantity of iron produced at present be decidedly greater than at any former period.

About three tenths of the total quantity of iron produced is used in the state of pig, or cast-iron, and is consumed principally in Great Britain and Ireland; the exports of pig-iron do not exceed 33,000 tons, and are sent principally to the United States and France. The other seven tenths are converted into wrought-iron, being formed into bars, bolts, rods, &c. The exports of the different sorts of iron amount, at present, to about 125,000 tons; which, at 10*l.* a ton, would be worth 1,250,000*l.*

Supposing the total quantity of pig-iron produced in Great Britain to amount to 800,000 tons a year, and to be worth, at an average, 6*l.* a ton, its total value will be 4,800,000*l.*; and the additional labour expended in forming the pig-iron into bar-iron, that is, into bars, bolts, rods, &c., may, probably, add about 1,500,000*l.* more to its value; making it worth in all about 6,300,000*l.*

The increased production of iron has not only led to its exportation in very large quantities, but has reduced our imports of foreign iron for home consumption from about 34,000 tons, which they amounted to at an average of the 5 years ending with 1805, to from 16,000 to 20,000 tons, consisting principally of Swedish iron, which is subsequently manufactured into steel, for which it is peculiarly well fitted.

Amount of Capital and Number of Hands engaged in the Production of Iron. — It appears from the previous statements, that South Wales (including Monmouthshire), Staffordshire, and Shropshire, particularly the first two, are the grand seats of the iron trade. We regret our inability to lay any details before the reader on which much reliance can be placed as to the amount of capital and the number of persons engaged in the business. In 1806, it was proposed to lay a tax on pig-iron; and, among other arguments in opposition to the tax, the producers contended that the capital employed in the establishment and support of the works amounted to 5,000,000*l.*; and that they supported a population of 200,000 persons. Inasmuch, however, as this statement was made by persons engaged in the trade, and anxious, by displaying its importance, not only to avert the threatened tax, but to increase their own consequence in a public point of view, it may fairly be reckoned as stretched to the utmost, or, rather, as somewhat exaggerated. The production of iron has been a good deal more than doubled since 1806; but even admitting the estimate of the capital, &c. then engaged in it to have been correct, they would not be increased, owing to the improvements that have been made in the business, in any thing like a corresponding proportion. Without pretending to give any very positive opinion on the subject, we should not be inclined to estimate the total amount of capital at present engaged in the trade at more than 7,000,000*l.*, and the number of persons engaged in, and dependent on the business, at more than 220,000.

In corroboration of this view of the matter, we extract from the treatise *On the Manufacture of Iron*, written for the Society for the Diffusion of Useful Knowledge, the following statement of the number of persons employed on a work where there are 5 furnaces, and a forge and mill capable of manufacturing about 200 tons of bar-iron weekly. The women and boys employed are stated separately from the men, and from each other: —

	Men.	Women.	Boys.
Colliers, including road-men, horse-tenders, and sundry labourers	280	0	27
Miners, including stacking and loading the mine, road-men, horse-tenders, and sundry labourers - - -	395	40	73
Furnaces, &c., including furnace labour; viz., keepers, fillers, refiners, cokers, pig-weighers, engineers, fitters-up, moulders, smiths, carpenters, sawyers, stablemen, brickmakers, masons, machine-men, carriers, &c. &c. - - -	257	39	3
Forge and mill; viz., puddlers, shinglers, rollers, catchers, straighteners, smiths, ballers, engineers, bur-weighers, clerks, &c. &c.	145	5	55
Agents, overlookers, and others, not included in the above -	31	0	0
Totals - -	1,108	84	191

Thus it appears that 5 furnaces, with a corresponding establishment for the manufacture of bar-iron, provide *direct* employment for nearly 1,400 individuals. Supposing, now, that a work of this description produces a twentieth part of the iron made in South Wales and Monmouthshire, and that the workpeople employed present a pretty fair average, — both of which suppositions are believed to be about the truth, — it follows that the iron-works of South Wales and Monmouth afforded direct employment in 1830 to about 28,000 people. But the product of the iron-works of South Wales was then to those of the whole kingdom as 277 to 680, or as 1 to 2·45. Hence, assuming that the proportions of workmen to the work are the same in other parts as in South Wales, the total number of persons directly engaged in the business in 1830 will be 28,000 × 2·45, or 69,000. On the hypothesis, that from 3 to 3½ persons are dependent on those engaged in the works, the total number for which they provided subsistence will be from 207,000 to 240,000. We believe the lesser number was, in 1830, nearest the mark; but probably the latter may be now rather under the mark.

The iron-works of South Wales and Monmouthshire are comprised in a range of country of about 25 miles from one extremity to the other, stretching in the direction of north-west and south-east. The works at Hirwain in Brecknock, and Aberdare in Glamorgan, form the extreme points to the westward. Then comes Merthyr Tydvil, the focus, as it were, of the manufacture; and from Merthyr there is a continued line of furnaces formed by the works at Dowlais, Romney, Tredegar, Sir Howey, Beaufort, Nant-y-Glo, Blaenafon, Varteg, Abersychan, and Pontypool, which finishes the principal range in that direction.

The progress of the manufacture in South Wales and Monmouthshire has been rapid beyond all precedent. Merthyr Tydvil and the contiguous district, the seat of the immense works of Messrs. Guest and Co., the largest in the empire; of Crawshay and Co., Thomson and Co., &c.; was, about the middle of last century, an insignificant village. In proof of this, it is sufficient to state, that, in 1755, the lands and mines for several miles round the village, the seat of the great works now erected, were let for 99 years for 200*l.* a year! In 1831, the population of Merthyr Tydvil was upwards of 22,000. Tredegar, in Monmouthshire, which, at the beginning of this century, was an uninhabited district, had, in 1831, a population of between 6,000 and 7,000 persons; and the increase in several other places has been similar.

The Staffordshire iron-works, including those of Warwickshire, are principally situated in the district stretching from Wolverhampton round by Walsall to Birmingham, and then round by Dudley. Colebrookdale is the principal seat of the iron-works of Shropshire.

We apprehend that the quantity of iron stated in the previous table to be made in Scotland in 1820 is a good deal within the mark; but in the interval the business has very much increased in that part of the empire. In June 1835, there were 29 furnaces in blast in Scotland, the annual produce of which was estimated at about 75,000 tons; and there were then in preparation 6 additional furnaces, calculated to produce 13,000 tons a year. With the exception of those at Carron, contiguous to the Forth, and those at Muirkirk, in Ayrshire, almost all the other works lie within no great distance of Glasgow. And now that the business has begun to be carried on upon a great scale, and with spirit and success, the advantages which the country round that city enjoys, for its farther prosecution in an inexhaustible supply of coal and ironstone, with the command of improved communications by land and water, seem to warrant the presumption that, at no distant period, it will rank among the principal seats of this important branch of industry.—(*Account of Glasgow, New Statistical Account of Scotland*, No. 7. p. 161.)

Instead of using, as had hitherto been done, the cool blast, or a blast of common atmospheric air, in working furnaces, the proprietors of the Clyde iron-works began some years since to use the "hot blast," or air heated to a high temperature. This discovery promises to be of material importance; and will, it is believed, lead to a considerable saving of expense in fuel, and consequently, in conducting the manufacture. It has been adopted at several works in England and France, as well as in Scotland.

Iron was formerly made in considerable quantities in various parts of Ireland, its manufacture having contributed in no slight degree to the destruction of the woods in that country. Boate tells us that the iron-works of the great Earl of Cork, in Munster, produced to his lordship a clear profit of 100,000*l.* (*Natural History*, p. 137. ed. 1652.); but, owing to the scarcity of timber, the iron-works were subsequently almost entirely abandoned. The attempts that have been made, within these few years, to revive them at Arigna and other places have been very unsuccessful. — (See vol. i. p. 397.)

Account of the Quantity of British Iron (including unwrought Steel) exported from the United Kingdom in 1836, specifying the Countries to which exported, and the quantity sent to each. — (*Papers published by Board of Trade*, vi. p. 62.)

Countries to which exported.	Bar Iron.	Bolt and Rod Iron.	Pig Iron.	Cast Iron.	Iron Wire.	Wrought Iron.				Old Iron for Remanufacture.	Unwrought Steel.
						Anchors and Grapnels.	Hoops.	Nails.	Of all other Sorts (except Ordnance.)		
	Tons cwt	*Tons cwt*	*Tons cwt*	*Tons cwt*	*Tons cwt*	*Tons cwt*	*Tons cwt*	*Tons cwt*	*Tons cwt.*	*Tons cwt*	*Tons cwt*
Russia - - -	559 0	78 10	- -	1,473 2	11 12	105 7	- -	3 17	610 4	- -	43 14
Sweden - -	27 14	- -	- -	24 12	1 2	2 4	0 10	1 10	14 14	- -	1 0
Norway - - -	5 17	24 10	16 10	0 13	0 13	15 19	15 0	1 2	49 10	- -	1 19
Denmark - -	993 10	94 6	756 6	6 14	2 5	27 15	163 7	1 7	159 8	- -	1 11
Prussia - - -	81 9	106 8	80 0	116 0	- -	5 0	218 2	3 7	102 19	- -	65 6
Germany - -	1,811 1	712 18	524 15	499 9	118 2	61 4	895 8	79 7	764 1	- -	113 15
Holland - - -	3,253 17	705 15	2,041 3	422 16	50 0	295 0	1,232 8	12 18	1,648 4	- -	85 5
Belgium - -	116 14	86 0	3,677 2	223 11	198 4	21 17	4 0	1 15	113 13	248 18	135 7
France - - -	1,346 8	213 0	10,650 14	207 2	15 8	247 13	495 10	0 3	444 2	28 0	368 1
Portugal - -	2,397 2	1,245 5	.10 0	288 11	6 10	182 8	593 18	61 13	260 8	- -	- -
Spain and the Canaries	286 14	63 14	62 0	49 11	9 10	65 17	606 2	9 3	103 11	- -	4 8
Gibraltar - -	286 19	21 0	- -	20 5	5 10	59 7	110 0	13 15	169 10	- -	- -
Italy - - -	5,817 3	1,989 15	898 15	328 4	23 8	128 13	834 19	6 5	382 11	135 18	35 6
Malta - - -	161 14	39 0	- -	3 16	6 19	2 3	29 12	3 16	15 17	- -	- -
Ionian Islands - -	72 12	3 10	- -	8 16	0 5	8 9	6 11	7 13	23 0	- -	- -
Morea and Greek Islands	10 0	2 0	- -	0 13	- -	3 3	20 0	0 8	0 10	- -	- -
Turkey - - -	796 4	301 14	- -	62 15	9 5	66 10	24 10	127 3	161 0	- -	1 8
Syria and Palestine -	- -	- -	- -	- -	- -	- -	- -	2 0	2 5	- -	- -
Asia - - -	8,989 17	2,098 16	207 3	872 7	7 9	262 1	832 1	392 19	2,835 6	- -	66 18
Africa - - -	3,509 8	.42 18	194 10	1,447 3	3 17	57 14	257 1	174 4	1,077 7	7 0	3 11
British North American Colonies - -	4,414 1	247 7	1,294 16	1,467 17	3 6	190 16	404 16	1,320 17	2,111 3	- -	101 3
British West Indies -	494 2	40 15	24 0	1,659 11	11 3	74 14	943 10	1,455 13	2,292 7	- -	3 17
Foreign West Indies -	1,476 14	12 11	68 0	1,714 2	3 12	11 4	72 18	426 13	387 4	- -	4 9
United S. of America	48,811 13	963 1	13,218 0	7,659 13	151 16	174 12	685 6	515 10	5,198 2	- -	1,952 6
Brazil - - -	989 17	35 8	30 0	782 12	1 10	96 15	238 0	617 10	507 13	- -	18 10
Mexico and the States of South America -	1,561 16	20 4	- -	488 2	6 10	- -	75 17	274 19	313 18	5 0	1 7
Isles of Guernsey, Jersey, Alderney, and Man	264 17	77 8	226 11	83 0	0 7	57 7	22 13	64 16	195 16	5 0	5 2
Total -	8,536 16	9,225 18	33,880 6	19,891 8	643 11	2,222 4	8,992 4	5,580 5	19,989 14	429 16	3,014 11

⁂ Quarters of a hundred-weight and pounds are omitted in the printing of this table; but they are taken into account in the summing up.

8. Tin is exclusively produced in Cornwall and Devonshire, but principally in the former. The tin mines of Cornwall have been wrought from the remotest antiquity; the Phœnicians being supposed by the most judicious critics to have traded thither for tin. In more modern times, the business of mining has been prosecuted with various skill and success. During the reign of Elizabeth, some German miners were brought over, by whom the processes were considerably improved. The produce of the mines has fluctuated a good deal during the last half century. At an average of the 10 years, ending with 1837, it may be taken, inclusively of the washings, at about 4,500 tons a year, worth from 65*l.* to 80*l.* a ton. The exports in 1834 did not exceed 467½ tons. The foreign market is principally supplied with tin from Banca.

Duties on Tin. — All tin produced in Cornwall has, for a lengthened period, been subject to a duty of 4*l.* a ton, payable to the Duke of Cornwall: the tin raised in Devonshire is subject to a similar duty of 1*l.* 13*s.* 4*d.* a ton. This duty produces from 15,000*l.* to 20,000*l.* a year,; and is felt to be a serious grievance, not only from its amount, but from the vexatious regulations under which it is collected. Though the orders sent to the miner were for tin of a peculiar description, he is not allowed to melt it at once into the required form, but is obliged to cast it, in the first instance, in *blocks*. This regulation being complied with, it might be expected that the tin would be surveyed by officers at the smelting-house, and the duty charged accordingly; but instead of this, the miner used to be obliged to convey it to one of the *coinage towns*, where it is (and where only it can be) coined; that is a small piece is struck off one of the corners, and it is impressed with the arms of the duchy, and the duty paid; and this done, the tin has frequently to be carried back, before it can be shipped, to the very place whence it was taken to be coined! But even this is not all. The ceremony of coinage used to be only performed quarterly; so that, however pressing the demand for tin might be in the interim, the miner could not supply it. There are also certain fees payable on the coinage, particularly if it take place during the Christmas and Lady-day quarters. Latterly, however, some relaxation has taken place in these regulations; coinages are allowed to be more frequent, and the cost of carriage is reduced by appointing a greater number of places. But if we add to the duty of 4*l.* a ton those charges, and a reasonable allowance for the expense of carriage, trouble, and inconvenience, to which the miner is still put, the whole may be moderately estimated at 4*l.* 10*s.* a ton. It is surely high time that this tax, and the preposterous regulations connected with it, were abolished.

4. COPPER. — This metal is most abundant in Cornwall, where it is produced on a very large scale, and is of much more importance than tin. The ores of copper and tin being frequently intermixed, it is natural to suppose that the former would be wrought to some extent at an early period; but it is only since the beginning of the 18th century that a due sense began to be entertained of their superior importance, and that they were wrought with spirit and success. From 1736 to 1745, they annually furnished about 700 tons of fine copper. From 1756 to 1765, they yielded 1,800 tons. In 1775, the produce increased to 2,650 tons. In 1798, it exceeded 5,000 tons; and at present it amounts to from 10,000 to 12,000 tons. Subjoined is

AN ACCOUNT of the Quantity of Ore, Pure Copper, &c., obtained from the Cornish Mines in each year, from 1800 to 1837, both inclusive.

Years.	Quantity of Ore.	Copper.	Value of Ore.	Produce.	Standard.		Years.	Quantity of Ore.	Copper.	Value of Ore.	Produce.	Standard.	
	Tons.	Tons.	£		£	s.		Tons.	Tons.	£		£	s.
1800	55,981	5,187	550,925	9·25	133	3	1819	88,736	6,804	623,595	7·625	127	10
1801	56,611	5,267	476,313	9·25	117	5	1820	91,473	7,508	602,441	8·125	113	15
1802	53,937	5,228	445,094	9·625	110	18	1821	98,426	8,514	605,968	8·625	103	0
1803	60,566	5,615	533,910	9·25	122	0	1822	104,523	9,140	663,085	8·75	104	0
1804	64,637	5,374	507,840	8·375	136	5	1823	95,750	7,927	608,033	8·25	109	18
1805	78,452	6,234	862,410	7·875	109	16	1824	99,700	7,823	587,178	7·875	110	0
1806	79,269	6,863	730,845	8·625	138	5	1825	107,454	8,226	726,353	7·625	124	4
1807	71,694	6,716	609,002	9·375	120	0	1826	117,308	9,026	788,971	7·625	123	3
1808	67,867	6,795	495,303	10·	100	7	1827	126,710	10,311	745,178	8·125	106	1
1809	76,245	6,821	770,028	8·875	143	12	1828	130,366	9,921	756,174	7·625	112	7
1810	66,048	5,683	570,035	8·5	132	5	1829	124,502	9,656	717,334	7·75	109	14
1811	66,786	6,141	556,723	9·125	120	12	1830	135,665	10,890	784,000	8·	106	0
1812	71,547	6,720	549,665	9·375	111	0	1831	146,502	12,218	817,740	8·375	99	18
1813	74,047	6,918	594,345	9·25	115	7	1832	139,057	12,099	835,812	8·75	104	14
1814	74,322	6,369	627,501	8·5	130	12	1833	138,300	11,185	858,708	8·	110	0
1815	78,483	6,525	552,813	8·25	117	16	1834	143,296	11,224	887,902	7·75	114	4
1816	77,331	6,597	447,959	8·625	98	13	1835	150,607	12,271	896,401	8·125	106	11
1817	76,701	6,498	494,010	8·5	108	10	1836	140,981	11,639	957,752	8·25	115	12
1818	86,174	6,849	686,005	7·875	134	15	1837	140,733	10,823	908,613	7·625	119	5

Exclusive of the copper raised in Cornwall, considerable quantities are raised in Anglesey and other parts of Wales, in Devonshire, Staffordshire, &c. The famous mines in the Parys mountain, near Amlwch in Anglesey, were discovered in 1768. The ore being in the mountain, it was not necessary to work it like the Cornish mines, by shafts and levels, but to dig at once into its sides. The supplies of ore were for a long time abundant beyond all precedent, and formed a vast source of wealth to the adventurers and proprietors. But for many years past the productiveness of the mine has been declining, and it now yields comparatively little. In all, it is supposed to have furnished about 85,000 tons of pure metal, amounting, at 90*l.* a ton, to the enormous sum of 7,650,000*l.*! At present, the entire produce of the mines of Anglesey and other parts of Wales does not exceed 900 tons a year. Previously to 1770, the mine of Ecton, in Staffordshire, was one of the most productive in the kingdom. The following statement, extracted from the Transactions of the Cornwall Geological Society, contains an authentic

Account of the Produce, in pure Metal, of the Copper Mines of Great Britain and Ireland, during the 5 years ending with the 30th June, 1827.

Districts.	1823.	1824.	1825.	1826.	1827.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Cornwall - - - -	8,070	8,022	8,417	9,140	10,450
Devon - - - -	510	451	554	482	424
Other parts of England -	5	23	20	21	89
Anglesey - - -	740	726	726	758	735
Other parts of Wales -	120	126	131	186	143
Scotland - - - -	13	- -	- -	- -	- -
Ireland - - -	257	488	512	482	540
Totals -	9,715	9,836	10,350	11,069	12,381

Owing to the want of coal, the Cornish copper ores are not smelted on the spot, but are shipped from the nearest port to the mine for Swansea, where the principal smelting companies have their establishments. Formerly there were one or two companies which smelted in Cornwall; but it seems to have been found, by experience, that it is less expensive to carry the ore to the coal than to bring the coal to the ore. The copper produced in Ireland is also carried to Swansea to be smelted; so that by taking an account of the quantity of copper sold in Cornwall, at Swansea, Devon, and Anglesey, we get a pretty accurate account of the total produce of the different mines of the empire.

Account of the Quantity of pure Copper sold in Cornwall, at Swansea, and in Devon, Anglesey, &c. — (Papers published by Board of Trade, Part III. p. 194.)

Years.	In Cornwall.	In Swansea.	In Devon.	In Anglesey.	Total in the United Kingdom.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1820	7,508	- -	- -	619	8,127
1821	8,515	344	871	558	10,288
1822	9,140	388	716	774	11,018
1823	7,927	353	694	705	9,679
1824	7,823	605	654	623	9,705
1825	8,226	729	667	736	10,358
1826	9,026	668	615	784	11,093
1827	10,311	772	562	681	12,326
1828	9,921	977	533	757	12,188

Account of the Quantity of pure Copper sold in Cornwall, &c. — *continued.*

Years.	In Cornwall.	In Swansea.	In Devon.	In Anglesey.	Total in the United Kingdom.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1829	9,656	1,221	454	726	12,057
1830	10,748	1,196	510	778	13,232
1831	12,044	1,240	486	915	14,685
1832	11,947	1,320	247	783	14,450
1833	11,191	1,158	307 Stafford 99	505	13,260
1834	11,224	1,580	538	700	14,042*

But considerable discrepancies have taken place in the produce of certain mines since the above account was made out, and probably the annual produce of the empire in copper may now be estimated as follows: — Cornwall, 11,000 tons; Devon, 500 ditto; other parts of England, 260; Anglesey, 750; other parts of Wales, 150; Ireland, 1,400; making a grand total of 14,060 tons. The price may be estimated at from 90*l.* to 100*l.* a ton, giving a gross sum of from 1,265,000*l.* to 1,406,000*l.* a year. Of this quantity from 8,000 to 9,000 tons are exported, partly wrought and partly manufactured. More than the half of all the copper exported is shipped for the East Indies and China, France and the United States being the next greatest markets. Foreign copper imported is altogether intended for exportation.

Copper is exempted from the tax, and the oppressive regulations growing out of it, laid on tin.

Account of British Copper Ore exported, distinguishing Unwrought and Wrought; Foreign Ore imported; Copper smelted therefrom and exported; the Rate per cent. of Metal exported to the Ore imported.

Years.	British Copper exported.			Foreign Copper imported.	Exported, smelted from Foreign Ore.	Produce per cent. of Ores (computed from Metal exported).
	Unwrought.	Wrought.	Total.			
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	
1826	130·2	4,669·4	4,799·7	64·8		
1827	1,329	5,841	7,171	32·9		
1828	1,079·5	5,126·5	6,206	334·6	7	Five Years. 13·2
1829	2,648·9	5,327	7,976	1,212·9	33·6	
1830	2,986	6,171·5	9,157·7	1,436·6	164·1	
1831	3,360	5,170·6	8,530·6	2,545·9	354·4	
1832	3,874·8	5,855·7	9,730·6	3,955·7	694·7	
1833	2,894·3	5,417·2	7,811·6	5,931·6	1,624·6	Five Years. 19·5
1834	4,098·9	4,787·5	8,886·5	6,987	1,185·7	
1835	3,162·6	5,940·6	9,111·2	13,945	2,772·8	
1836	1,970·4	6,105·8	8,076·2	18,419	1,939	
1837	1,673·6	5,455·6	7,129·3	19,465·8	5,155·2	

Working of the Tin and Copper Mines of Cornwall. — The number of these mines in this county is not accurately known; but 140,753 tons of copper ore, brought to market in 1837, were furnished by 77 mines. Exclusive, however, of these mines, there are many copper mines in which trials for ore are going on, and there is no correct list of the tin mines, but they are comparatively unimportant. Old workings are frequently given up, and new ones opened, while those that were formerly abandoned are again in many instances brought into activity. Within the last two or three years several new mines have been opened, and a large amount of money expended by companies formed in London, Liverpool, &c. These are generally called, from the way in which shares in them have been issued, *scrip* companies. It is believed that there may at present (1838), be in all from 130 to 150 mines in which operations are going forward.

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* This is exclusive of the quantity raised in Staffordshire.

The six most important mining companies in Cornwall, with the quantity and value of their produce in 1837, were

	Tons of Ore.	Value.
Consolidated and United Mines	26,588	£159,689
Tresavean	13,221	90,558
Fowy Consols	15,180	90,462
East-Wheal-Crofty	7,673	47,506
Carnbrea	6,225	46,472
Wheal-Jewel	4,782	38,904
Totals	73,669	473,591

So that these six companies furnish more than half the produce of the county in copper, both in ores and value.

The veins or *lodes* vary in thickness from 3 inches to no less than 30 feet. The mines are sometimes wrought to a very great depth. In the consolidated mines in the parish of Gwennap, between Truro and Redruth, there is a shaft 300 fathoms deep, and the temperature at the bottom varies from 96° to 99°. No fewer than 21 steam-engines are employed in these mines, some of which are of the very largest size. There are many instances in which a single engine, with its apparatus, and the sinking of the shaft, has cost upwards of 12,000*l.* The power of the steam-engines at present (1838) employed in the Cornish mines is supposed to be equivalent to about 46,000 horses.

Mines in Cornwall are generally undertaken by companies of adventurers, the shares being divided into 64th, and sometimes into 128th parts. If the mine be upon a waste, it is the property of the King, as Duke of Cornwall, to whose agents the adventurers apply for a lease. If the mine be private property, its owners are of course applied to. It is usually let for 21 years, or for such part of that time as the workings shall be proceeded in. The payment to the proprietor, or the lordsman, varies, according to circumstances, from 1-10th to 1-15th part of the ores raised, but the deep mines pay only 1-24th part.

The ore, after being brought to the surface, is washed, reduced to a powder, and otherwise prepared, so as to be fit for the smelting-house.

Besides the tin mines, there are *stream-works*, which supply a considerable portion of the finest tin. They occur in valleys, and derive their name from the manner in which they are worked, which consists chiefly in washing the alluvial soil, by directing a stream of water over it, when the earthy particles being washed away, the tin ore remains in a separate form. It is a singular fact that the only traces of gold to be found in Cornwall are in those alluvial depositions, in which it sometimes occurs in small grains, mostly detached, but occasionally adhering to quartz. — (*Guide to Mountsbay*, p. 197. 2d edit.)

The miners, whether tin or copper, are sometimes paid by the piece, and sometimes by a certain per centage of the ores they raise. The workmen relieve each other by turns, each set generally continuing in the mine for *eight* hours; but when working at the bottom of very deep shafts, they relieve each other every *six* hours. When it is remembered that the miner always works in a damp atmosphere, frequently with his feet in water, and his clothes perfectly wet, his occupation will seem any thing but enviable. But if he make what he calls wages, he is satisfied; and is cheered by the prospect of attaining to the rank of *captain* or overseer.

Tin and copper mining, like that of the precious metals, partakes largely of the nature of a lottery. There is no certainty beyond the present moment. Veins that promise much in their beginning sometimes lose all traces of advantage below, and occasion immense loss to the adventurers, or continue to be wrought for many years under *promising* symptoms, but with little or no profit. And, on the contrary, many mines and veins, which, at the outset, promised little or nothing in the estimation of experienced miners, have yielded very large profits. Hence, although great losses often occur, great fortunes are sometimes made, and even to an amount which far outstrips the expectations of the most sanguine. — (*Phillip's Mineralogy and Geology*, pp. 194—211.) Dr. Paris mentions that *Crennis* copper mine returned a clear profit to the adventurers of 84,000*l.* in one year! *Huel Alfred*, during the last period of its working, yielded very nearly 130,000*l.*, after defraying every necessary outlay. The expense attending the working of some of the large mines is very great.

The largest outlay on one concern at present is on the consolidated mines, which employ 3,400 hands, and raise 500 tons of ore per week. In 1837 the outlay on them was,—

	£	s.	d.
Management - - - - -	4,717	16	6
Labour - - - - -	76,881	6	5
Artizans, as smiths, carpenters, &c. - -	4,795	12	0
Carriage and whim horses - - -	1,143	9	8
Engine cost for drainage - - -	20,430	8	8
Materials, as timber, iron, gunpowder, candles, rope, &c.	24,062	7	3
Ore dressing, &c. - - - - -	8,571	6	0
Sundry payments - - - - -	2,303	12	5
	£142,905	18	11
Deduct sundry receipts for old materials sold, &c. -	4,937	10	10
Remains, nett expense - -	£137,968	8	1

The candles used in these mines vary from 9,000 to 10,000 lbs. a month; the consumption of gunpowder is from 5,000 to 6,000 lbs. a month!

The miners and others engaged in the mines of Cornwall and Devonshire are under the especial jurisdiction of the Stannary courts, held by the lord warden of the Stannaries, or his deputy. These courts were established about 500 years ago; and, after being modified in the reign of Charles II., have been much improved by a late act. Formerly they were applicable only to the tin miners; but now their jurisdiction is extended to all sorts of miners in the two counties. These local courts are found to be of great advantage; and transact the peculiar business that comes before them cheaply, skilfully, and expeditiously.

The capital employed in connection with the copper and tin mines of Cornwall has been estimated as under: —

In the working of the mines - - -	£1,000,000
In the wharfs and trades dependent on them -	120,000
In waggons, carts, horses, &c. - - -	100,000
Smelting works and mills - - -	1,000,000
Collieries - - - -	100,000
Shipping - - - - -	120,000
Total -	£2,440,000

The number of persons employed in connection with the mines are supposed to be as under: —

In and on the mines - - - -	60,000
Carriers - - - - -	2,500
Sailors - - - - -	2,500
In the smelting works - - - -	6,000
Total -	71,000

5. **Lead.** — Mines of this valuable mineral have been wrought in England from the æra of the Romans. It does not, however, appear that it was obtained any where except in Derbyshire, till 1289, when it was discovered in Wales: and the fact having transpired that silver was found intermixed with the Welsh ores, gave a new stimulus to the business; but in other respects the discovery of silver was of no use; the quantity obtained being insufficient to defray the cost of its separation from the lead. At present, the most productive lead mines are situated in Allendale and other parts of Northumberland; in Aldstone-moor, &c., in Cumberland; in the western parts of Durham; in the hundred of High Peak, in Derbyshire; in Flintshire; in Salop; and in Scotland, at Leadhills, on the confines of Dumfriesshire and Lanarkshire. There are no means by which to arrive at any correct estimate of the annual produce of these mines; but in the aggregate it must be very large, and is believed, indeed, not to fall short of from 45,000 to 50,000 tons. The foreign lead imported is mostly all re-exported; so that the supply obtained from our own mines must be adequate, not only to furnish an annual export of from 10,000 to 14,000 tons a year, but to supply the home consumption, which is very great. The price of lead declined considerably after 1820,—a result principally to be ascribed to the increased supplies of lead from Spain, and to the comparatively cheap rate at which they were furnished; latterly, however, the supplies from the Spanish mines have fallen off, and prices have again risen. A considerable quantity of silver is now obtained from lead; the expense of its extraction having been materially diminished by the invention of improved processes. It is believed that of 45,000 tons of lead raised in Great Britain, about 25,000 yield 8 oz. per ton of silver. Supposing this estimate to be correct, the entire produce in silver will be 200,000 oz.; which, at 5*s.* per oz. will be 50,000*l.* a year.

Lead is raised in Ireland in different parts; in the county of Wicklow, in Clare, at Carne in Wexford, and in Armagh and Donegal. But some of the lead mines that were formerly wrought in Kerry and Mayo have been abandoned.

That very rare mineral called *black lead, plumbago*, or *wad*, is found in Borrowdale in Cumberland. The mines in this place have been wrought since the days of Queen Elizabeth, and furnish the very best material hitherto discovered for making pencils. Formerly the proprietors of the wad mines enjoyed a complete monopoly of the market; and by occasionally shutting them up, and limiting the supply of lead, kept its price at a high level, and realised large profits. Latterly, however, black lead has been imported in considerable quantities, both from Spain and Ceylon; and being, though inferior, cheaper than the English, has superseded the latter for most purposes, except making the best pencils. The lead is not found in veins, but in detached pieces, or in what are called *sops* or *bellies*; so that it is often lost, and the miners are frequently engaged for a long time seeking at random for a new supply. The quality of the mineral differs materially. The lightest is the best. It is sawn into the proper form for pencils by the manufacturers of Keswick and London. — (*Baines's Guide to the Lakes*, 3d ed. p. 300.)

6. SALT. — There is no country better supplied than England both with brine springs and beds of fossil or rock salt. The former have been known and wrought at Northwich, Winsford, Middlewich, and other places contiguous to the river Weaver in Cheshire, and at Droitwich in Worcestershire, from a very remote era. But the beds of rock salt were not discovered till a comparatively recent epoch; the first of them having been met with in 1670, about 34 yards from the surface, in searching for coal in the vicinity of Northwich. Another bed of fossil salt was discovered in 1779, near Lawton, 42 yards below the surface; and others have since been discovered in other parts of the surrounding country. These fossil beds are generally of very great thickness; and it has been found that, upon cutting through the indurated marl at the bottom of the first bed, there was another below it of still greater thickness. In one instance a third bed has been pierced to the depth of 25 yards, without having been cut through. —(See Vol. I. p. 91.) It has been ascertained that there are also beds of fossil salt at Droitwich; but they are not wrought, and comparatively little is known with respect to them.

In the early part of last century, the salt made in England was supposed to be inferior to that of several other countries; and while a good deal of foreign salt was imported, very little native salt was exported. But the manufacture progressively improved; and for these many years past, the production of salt for home consumption has been carried to a vast extent, and has become an object of great national importance.

Rock salt is not generally, when dug from the mine, of such a degree of purity as to admit of its being used for most purposes, without being refined; and by far the largest part of the salt produced in Cheshire, with the whole of that produced in Worcestershire, is obtained from the brine springs. In the former, the brine being pumped up, by means principally of steam-engines, from very deep wells, is collected in reservoirs, where it is sometimes saturated, or strengthened, by an admixture of crushed rock salt. It is then conveyed into large, broad, shallow pans placed over furnaces, and the water being evaporated, the salt is taken out. Different qualities of salt, such as the *stoved* or *lump salt*, *common salt*, *large-grained flaky salt*, *large-grained fishery salt*, &c., are produced according to the mode in which the heat is applied, and the evaporation conducted. Animal jelly, butter, and other foreign substances, are sometimes made use of to assist in clearing the brine, and in the granulation of the salt.

The coal used at the salt works at Northwich, Winsford, and other places, is obtained from the collieries in the southern part of Lancashire, near St. Helen's. The flat-bottomed boats (*flats*) which convey the salt from the different works to Liverpool, after discharging their cargoes, return loaded with coal; so that few channels of communication are more crowded than the Weaver.

During the 10 years ending with 1806, the average quantity of white, or manufactured salt, brought down the Weaver, amounted to 139,317 tons a year. — (*Holland's Cheshire*, p. 321.) But the business has been since very greatly increased; so much so that, during the 3 years ending with 1834, the average annual supply of white salt, sent down the Weaver, for home consumption and exportation, amounted to 368,594 tons, exclusive of about 15,000 tons a year sent by canals into different parts of the interior, and of about 27,000 tons a year sent down the river to be used at the Gartshore and Dungeon works, on the Lancashire side of the Mersey, and at Frodsham. Of this vast quantity, Northwich furnishes about 220,000 and Winsford about 150,000 tons. — (*Private Information.*)

During the 10 years ending with 1806, 51,109 tons of rock salt was sent down the Weaver, being destined mostly for Ireland, and for exportation. — (*Holland's Cheshire*, p. 317.) This department of the business has also greatly increased in the interval, though not so much as the other. The supply of rock salt at present brought down the Weaver, varies from about 90,000 to 95,000 tons a year; but as a part of it is used at the Gartshore and Dungeon works, where fine salt is prepared, it is not possible accurately to estimate the quantity exported and sent coastwise to Ireland, and other parts; but it may probably amount to from 70,000 to 80,000 tons a year.

In 1805, the manufacturers of white salt, with the proprietors of the fossil beds, and others interested in the salt trade of Cheshire, presented a memorial to Mr. Pitt, against the duty which it was understood he intended to propose on salt when exported. In it they stated, that the capital vested in salt works, rock pits, and lighters, amounted to 436,000*l.* over and above the capital employed in carrying on the trade; and that 2,950 individuals were engaged in the works, exclusive of those dependent on them. — (*Holland's Cheshire*, p. 316.) At present the trade employs about 300 flats, or lighters, measuring at an average, about 70 tons each, employing in all, inclusive of carpenters and builders, about 1,200 men. Altogether there are about 8,000 individuals directly employed in the salt trade of Cheshire; and the capital embarked in it, may be estimated at from 600,000*l.* to 700,000*l.* — (*Private Information.*)

Salt has been obtained from the brine pits at Droitwich in Worcestershire, for at least, 1000 years. When dug to a proper depth, the brine ascends to the surface of the pit. A canal has been constructed from Droitwich to the Severn, navigable by vessels of 60 tons burthen, which convey the salt to Gloucester, and other ports, and return laden with the coal required in the works. The quantity of white salt made at Droitwich is very inferior, as compared with that produced in Cheshire, and it does not furnish any supplies of rock salt.

Exclusive of the salt produced in Cheshire and Worcestershire, a good deal was formerly obtained by the evaporation of sea water, principally at Lymington, and other places on the Hampshire coast; but also in various other parts. But since the abolition of the duties, most of these works have been either wholly abandoned, or much reduced. Part of the rock salt shipped at Cheshire is refined at Newcastle and other places.

Consumption of Salt. — The consumption of salt in this country is immense. Necker estimated the consumption in those provinces of France, which had purchased an exemption from the *Gabelle* (*Pays francs redimées*) at about 19½ lbs. (Eng.) for each individual. — (*Administration des Finances*, tom. ii. p. 12.) From all that we have been able to learn on the subject, we believe that the consumption of the people of this country may be estimated a little higher, or at 22 lbs; the difference in our food and habits, as compared with the French, fully accounting for this increased allowance. On this supposition, and taking the population at 18,000,000, the entire consumption of Great Britain only, exclusive of Ireland, will amount to 396,000,000 lbs., or 177,000 tons.

Exclusive of this immense home consumption, we annually export from 10,000,000 to 12,000,000 bushels, which, at 56 lbs. a bushel, are equivalent to about 300,000 tons. The Americans are the largest consumers of British salt; the exports to the United States, in 1833, having amounted to 3,924,386 bushels. During the same year, we exported to Holland and Belgium 1,570,825 bushels; to the British North American colonies, 1,647,171 do.; to Russia, 1,413,052 do.; to Denmark, 1,050,748 do., &c.

The cheapness of this important necessary is not less remarkable than its diffusion. Its present cost may be estimated, at a medium, at from 14*s*. to 16*s*. a ton.

Duties on Salt. — In ancient Rome salt was subject to a duty (*Vectigal salinarum*; see *Burman, Dissertatio de Vectigalibus Pop. Rom.* c. 6.); and it has been heavily taxed in most modern states. The *gabelle* or code of salt laws, formerly established in France, was most oppressive. From 4,000 to 5,000 persons are calculated to have been sent annually to prison and the galleys for offences connected with these laws, the severity of which had no inconsiderable share in bringing about the Revolution. — (*Young's Travels in France*, vol. i. p. 598.) In this country duties upon salt were imposed in the reign of William III. In 1798 they amounted to 5*s*. a bushel; but were subsequently increased to 15*s*. a bushel, or about *forty* times the cost of the salt! So exorbitant a duty was productive of the worst effects; and occasioned, by its magnitude, and the regulations for allowing salt, duty free, to the fisheries, a vast deal of smuggling. The opinion of the public, and of the House of Commons, having been strongly pronounced against the tax, it was finally repealed in 1823.—(*Commercial Dictionary*, art. SALT.)

7. MANGANESE, a metal of considerable consequence in the arts, is found principally in Devonshire, the eastern part of Cornwall, and in Warwickshire. The quantity raised is from 3,000 to 4,000 tons a year. Zinc is obtained from the Derbyshire mines; but Flintshire and the Isle of Man furnish ores of the best quality. It is produced, but in very small quantities, in England, the metal being imported in great abundance and at a very cheap rate from Silesia.

8. QUARRIES (STONE). — The quarries of England are not of any great value or importance; and, in consequence, the greater number of buildings in most parts of the country are constructed of brick. The principal quarries are situated in the Isle of Portland, and in the neighbourhood of Bath. The former, which are the most important, have supplied the stone used in the construction of St. Paul's, and most other public buildings in London. The annual produce of the Portland quarries may at present be estimated at about 18,000 tons. The best blocks bring from 18*s*. to 22*s*. a ton, and the inferior from 6*s*. to 8*s*. The quarries are wrought partly by owners and partly by lessees, who pay the proprietors at the rate of 1*s*. 6*d*. a ton on the superior stones, and of 11*d*. on the coarse or inferior. In all, about 300 men and boys are employed in the quarries. — (*Private information.*)

The quarries of Gateshead Fell, near Newcastle, furnish the grindstones known in all parts of the world by the name of "Newcastle grindstones," from the port of shipment.

There are some very excellent quarries in Scotland. That of Craigleith, near Edinburgh, Cullalo, in Fife, and some others, are amongst the most celebrated. The beauty of the houses in the new town of Edinburgh attest the excellence of the quarry (Craigleith) which furnishes the stone of which they are built. Large quantities of granite are shipped from Aberdeen for London, where it is employed in paving the streets. The docks at Liverpool are partly constructed of granite brought from Kirkcudbrightshire.

Quarries (*Slate*). — The principal slate quarries in Great Britain are in Caernarvonshire. Those belonging to Mr. Pennant (formerly Lord Penrhyn's), near Bangor, are the most extensive and valuable. They furnish employment for about 1500 men and boys. The other slate quarries in Caernarvonshire and North Wales generally employ about 1820 men and boys. There are also extensive quarries in different parts of South Wales, at Ulverstone in Lancashire, &c.

The principal slate quarries of Scotland are in the island of Easdale and at Balachulish in Argyleshire. Speaking generally, they do not furnish slates of the size and smoothness of those obtained from the Welsh quarries.

9. LIME. — Limestone is very widely diffused over Great Britain and Ireland; and being, when calcined, used largely both in the building of houses and as a manure, its consumption must be immense. There are not, however, any means of accurately estimating its amount.

10. FULLER'S EARTH. — This is a species of clay used in the

woollen manufacture, being once deemed of so much importance that its exportation was prohibited under a heavy penalty. At present, however, it is not employed to nearly the same extent as formerly, many of the clothiers using soap in preference to it. Malcolm, in his *Survey of Surrey*, published in 1809, says, that he was at considerable pains in endeavouring to ascertain the consumption of Fuller's earth, and that he found it to amount to about 6,300 tons a year for the whole kingdom, of which about 4,000 tons a year were furnished by Surrey.

11. **BRICKS AND TILES.**—These, though manufactured articles, may perhaps, be more properly noticed here than in any other place. By far the greater number of houses in London, and other English towns, as well as in most country districts, are built of brick, so that the consumption is immense. Tiles, also, though inferior to slates as a roof, are used in large quantities; and they are now, also, largely consumed in draining. Owing to the general use of stone in buildings in Scotland, the consumption of bricks in that part of the empire is comparatively limited.

Both tiles and bricks have been subjected to an excise duty; that on tiles was, however, repealed in 1833. But the duty on bricks is still continued. It produces from 450,000*l.* to 480,000*l.* a year. Sound policy would suggest its repeal; for no duty being laid on stone, the use of bricks is unfairly limited, and an injury done to those engaged in their manufacture. We subjoin a

RETURN of the Number of Bricks upon which Duty has been paid, between 5th January, 1836, and 5th January, 1838, in England and Scotland; with the Amount of Duty paid thereon :—

	Year ended 5th January, 1837.		Year ended 5th January, 1838.	
	Number of Bricks	Amount of Duty.	Number of Bricks	Amount of Duty.
England -	1,606,025,756	£471,339 4 -½	1,490,981,305	£437,655 2 2
Scotland -	34,213,160	10,133 18 4¼	33,014,470	9,784 9 2¼
Total -	1,640,238,916	481,473 2 4¾	1,523,995,775	447,439 11 4¼

Sir Charles Lemon has subjoined to his valuable Paper, in the *Statistical Journal*, on the Copper Mines of Cornwall, the following estimate of the value of the minerals annually produced in Great Britain. It differs in some respects from the previous statements, but in general it agrees pretty closely with them:—

Estimate of the Mineral Produce of Great Britain, on an Average of Years and Prices.

	Quantity.	Value. £.		Quantity.	Value. £.
Silver -	10,000 lbs. Troy -	30,000	Coal -	26,000,000 tons -	10,000,000
Copper -	13,000 tons -	1,300,000	Salt, Alum, and other minor Produce more than -		1,000,000
Tin -	5,500 tons -	550,000			
Lead -	46,000 tons -	950,000			
Iron -	900,000 tons -	7,000,000	Total Value probably exceeds		£20,000,000

Profits of Mines, Iron Works, &c.—Subjoined is an account of the produce of quarries, mines, iron works, &c. in 1814–1815 as ascertained by the Property-Tax Commissioners. The increase in the interval has, however, been very great; and, on the whole, we should think that the under-mentioned sums may be safely increased fully 50 per cent. to get the total profit at present.

Account of the Profits of Mines, Quarries, and Iron Works, as assessed by the Property-Tax Commissioners in 1814 and 1815.

Counties.	Profits of Quarries.	Profits of Mines.	Profits of Iron Works, &c.	Counties.	Profits of Quarries.	Profits of Mines.	Profits of Iron Works, &c.
	L.	L.	L.		L.	L.	L.
Bedford	- -	- -	127	Rutland	30	- -	1,140
Berks	- -	- -	4,506	Salop	425	14,224	11,230
Bucks	- -	- -	219	Somerset	632	17,302	1,281
Chester	699	15,085	19,221	Southampton	- -	169	9,715
Cornwall	2,685	78,375	9,428	Stafford	539	37,272	6,484
Cumberland	3,028	60,102	1,421	Suffolk	148	- -	3,103
Derby	1,164	26,217	39,915	Surrey	335	- -	6,050
Devon	5,232	25,665	10,225	Sussex	180	4	4,360
Dorset	237	- -	1,670	Warwick	- -	4,155	89,079
Durham	1,448	68,045	6,286	Westmoreland	424	2,047	353
York	8,490	42,476	186,373	Wilts	110	- -	812
Essex	25	- -	7,335	Worcester	174	296	6,041
Gloucester	559	5,916	5,587	Brecon	- -	2,232	2,040
Hereford	58	- -	3,792	Caermarthen	- -	5,655	886
Huntingdon	- -	- -	2,795	Caernarvon	300	80	- -
Kent	- -	- -	5,899	Denbigh	10,836	3,769	388
Lancaster	6,326	51,899	68,167	Flint	120	20,918	- -
Leicester	1,115	2,070	43	Glamorgan	697	26,925	26,264
Lincoln	119	- -	6,452	Montgomery	8	- -	- -
Middlesex	- -	- -	4,715	Pembroke	603	3,102	- -
Monmouth	- -	4,260	2,433				
Norfolk	- -	- -	78	England and Wales	49,501	616,201	574,728
Northampton	444	- -	196	Scotland	20,876	62,584	62,960
Northumberland	2,313	94,187	17,708				
Nottingham	- -	3,754	355	Great Britain	70,377	678,785	637,688
Oxford	- -	- -	121				

CHAPTER III. — FISHERIES.

The supply of fish in the seas round Britain is most abundant, or rather quite inexhaustable. "The coasts of Great Britain," says Sir John Burroughs, "do yield such a continued sea harvest of gain and benefit to all those that with diligence doe labour in the same, that no time or season of the year passeth away without some apparent means of profitable employment, especially to such as apply themselves to fishing; which from the beginning of the year unto the latter end, continueth upon some part or other upon our coastes; and these, in such infinite shoales and multitudes of fishes, are offered to the takers, as may justly move admiration, not only to strangers, but to those that daily are employed amongst them." — "That this harvest," says Sir John Barrow, "ripe for gathering at all seasons of the year, without the labour of tillage, without the expense of seed or manure, without the payment of rent or taxes, is inexhaustable, the extraordinary fecundity of the most valuable kinds of fish would alone afford abundant proof. To enumerate the thousands and even millions of eggs which are impregnated in the herring, the cod, the ling, and, indeed, in almost the whole of the esculent fishes, would give but an inadequate idea of the prodigious multitudes in which they flock to our shores: the shoals themselves must be seen, in order to convey to the mind any just idea of their aggregate mass." — (*Ency. Britannica*, vol. ix. p. 590. new ed.)

This abundance of fish, coupled with the predilection of a large portion of the population for a maritime life, would naturally make one anticipate that the fisheries would be prosecuted on a very large scale, and be in a very flourishing state; but such is not really the case: except in London, and a few seaport towns, the consumption of fish is not great. It is found, to be, on the whole, rather more expensive than most other sorts of food. And hence, notwithstanding all the efforts that have been made, by bounties and otherwise, to stimulate different departments of the fishery, none of them has attained to any very great magnitude.

The principal fish-market in the British dominions is that of Billingsgate, in the city of London. A notion has been pretty current, that the dealers in this market contrived to exercise a sort of monopoly, and that they had succeeded in restricting the supply of fish, and in forcing up its price to an unnatural elevation. But there does not appear to be any foundation whatever for this notion. On the contrary, there are but few markets in which competition is so keen as at Billingsgate; and none, perhaps, in which the supply and price of the articles sold are so very fluctuating. The smacks that catch the fish are allowed to be eight days at Gravesend; but, except in winter, they seldom lie so long. The fish is transhipped from the smacks to hatch-boats, that bring it to town; and, owing to the liability of the fish to spoil, and other circumstances, it is always a great object with the fishermen to bring their boats as early to market as possible. It is said, that if, during the mackarel season, a vessel come to the wharf at 5 o'clock in the morning, when the market opens, the fish may sell from 48*s.* to 50*s.* a hundred; whereas, if the same vessel came at 10 o'clock, the mackarel would not be worth more than 36*s.* a hundred; and if she came in the afternoon, they would not fetch more than 24*s.* or 28*s.*! — (*Report of* 1833 *on Channel Fisheries*, p. 89.) A good deal of the mackarel and other fish taken on the Kentish and Sussex coasts is, for sake of dispatch, sent to London in vans with four horses; and, to hasten their arrival, they not unfrequently have six horses. There is now, owing to the command of steam tugs, comparatively little difficulty in getting fish up by water in adverse winds; and the market is in consequence more regularly supplied. But the fishery is in itself extremely uncertain; and instances occur every season, of the price of the same description of fish varying cent. per cent., and sometimes more, from one day to another. On the whole, however, there has been a very great decline in the prices of most sorts of fish at Billingsgate, within the last 10 or 12 years; though, as the price of butcher's meat has declined in a nearly equal ratio, it is not supposed that the consumption of fish has been materially increased.

In Billingsgate, fish, other than salmon and eels, are sold either by tale or by measure; but it has been supposed that, taking all the fish that comes to market, its price, as sold by the fishers, would, at a rough average, be about 2½*d.* per lb. — (*Report*, p. 95.) The extreme difference between the wholesale price at Billingsgate, and the retail price at the west end of the town, is owing to various causes; but principally, perhaps, to the perishable nature of the article, which, if not speedily disposed of, cannot be sold at all, except at a heavy reduction. The notion, that fish is thrown into the river or destroyed, to enhance or keep up the price of the remainder, is quite unfounded. The only difficulty is to prevent bad and unwholesome fish from being sold; and to effect this, is the duty of a clerk of the market, or inspector, appointed by the city.

The fishery is carried on partly in the rivers, and in the bays and along the coasts, of Great Britain and Ireland; and partly in the seas at a less or greater distance from our shores. Of the first, the salmon, herring, pilchard, and oyster — and of the second, the cod, turbot, and whale — fisheries, are the most important.

1. *Salmon fishery.* — Salmon being rarely caught, except in æstuaries or rivers is, in most instances, private property: the fisheries frequently producing a large revenue to their owners. It is found in most English rivers; but seldom in such abundance as to make the fishing an object of much attention. London derives the principal part of its supply from Scotland; and Liverpool, Manchester, &c. from Ireland. The fishery in the Tweed is important and valuable. About 20 years ago, it produced a rental of from 15,000*l.* to 18,000*l.* a year. But in the interval, the decline has been such, that at present it does not yield above 4,000*l.* or 5,000*l.* a year to its proprietors. This extraordinary decline is principally owing to a nearly corresponding falling off in the catch of salmon; the exports from Berwick having sunk from about 9,000 or 10,000 boxes a year to 3,000 or 4,000 — (*Kerr's Berwickshire*, p. 460; *Penny Cyclopædia*, art. BERWICK.)

Exclusive of the Tweed, there are valuable salmon fisheries in the Tay, Forth, Dee, Don, Findhorn, Spey, Ness, Conon, and other Scotch rivers. But they are mostly all in about the same condition as those of the Tweed. There are everywhere complaints of a growing scarcity of fish; and the fact that the exports from the rentals of all the principal rivers have decreased very much during the last 20 years, shows that these complaints are but too well founded. Subjoined is an account of the

PRODUCE of the Salmon Fishery on the River and Æstuary of Tay, and the River Earne, annually, from 1830 to 1835.

	1830.		1831.		1832.		1833.		1834.		1835.	
	Salmon	Grilses.	Salmon	Grilses.	Salmon	Grilses.	Salmon	Grilses.	Salmon	Grilses.	Salmon	Grilses.
River Tay - -	22,896	43,102	14,224	30,180	20,838	43,248	14,114	34,787	21,733	37,592	25,614	51,315
Æstuary of Tay -	4,762	10,147	5,603	8,574	5,054	9,836	6,432	16,206	6,407	10,018	7,271	9,721
River Earne - -	902	2,655	583	1,765	766	2,638	773	2,240	733	1,685	1,084	3,193
Total -	28,560	55,904	20,410	40,519	26,658	55,722	21,319	53,233	28,873	49,295	33,969	64,229

It is not easy to account for the decline of the salmon fisheries; and many conflicting opinions and theories have been advanced with respect to it. Most persons seem to think that it is mainly owing to the prevalence of poaching, or to the destruction of the breeding fish and fry in the upper parts of the rivers, during *close time;* and the extent to which this pernicious practice has been carried of late years, has, no doubt, been highly injurious, though we doubt whether it has been so in the degree that is commonly supposed. On the whole, we rather incline to think, that fully as much injury is done to the fishery in most rivers by the *weirs*, or salmon traps, and other obstructions placed in the way of the fish when ascending the rivers to spawn, as by any thing else. These obstructions are not, indeed, always equally prevalent, and, in some instances, they have been partially demolished; but there is hardly a river in which they do not still exist to a greater or less extent, and are generally believed to be very destructive. The fishery has also, perhaps, been injured by the temptation to overfish, caused by the high price of salmon; and in a still greater degree by the too limited duration of the *close time*. The last-mentioned cause of decline is thought, by many good judges, to be the most powerful of the whole; and it is justly objected to the late act for the regulation of the Scotch fisheries (9 Geo. 4. cap. 39.), that it prolongs the period for fishing too far into the spawning season. A police has been established for the protection of the fisheries on the Tweed, under the provisions of a local act passed in 1830; and it is to be hoped that the landlords and others interested in the fishery will see the expediency of making it effectual to the end in view.

The fisheries in the Bann, near Coleraine; the Foyle; the Billick, near Ballyshannon; the Boyne, above Drogheda, and in various other rivers, are very productive. Their produce is principally shipped for Liverpool; and it is mainly owing to the increased supplies derived from this source, and the facility with which they are brought to market by steam packets, that, despite the falling off in the produce of the Scotch and English rivers, the price of salmon in England has been materially diminished. It has been stated that the Irish salmon brought to Billingsgate market is generally in superior condition to the Scotch; a circumstance for which, if it be really true, it is rather difficult to account. — (*Report on Channel Fisheries*, p. 96.)

The Salmon Fisheries in the Foyle belong, with a trifling exception, to the Irish Society, a Branch of the Corporation of the City of London. Contrary to what has happened in most other places, these fisheries have very considerably increased of late years. Down to 1823, the average annual produce did not exceed 40 tons; but from 1823 to 185 inclusive, it has been 140 tons. The yearly produce from 1827 to 1835, was as follows: —

Years.	Number of Salmon.	Weight.				Years.	Number of Salmon.	Weight.			
		Tons.	Cwt.	Qrs.	lbs.			Tons.	Cwt.	Qrs.	lbs.
1827	46,001	127	3	3	16	1832	64,447	177	2	2	1
1828	50,606	132	15	3	25	1833	50,337	130	15	2	11
1829	32,770	85	1	1	2	1834	53,748	135	15	2	22
1830	66,053	179	15	3	13	1835	55,906	143	9	1	10
1831	62,560	154	7	0	1						

Average number of Salmon, 53,603. Weight, 140 Tons, 14 Cwt. 0 Qrs. 14 lb.

It is the practice in the North of Ireland to allow 120 Pounds to the Cwt., and this practice has been adhered to in the foregoing Statement.

The sales of Salmon caught in the Bann, Foyle, and Moy, in 1835, amounted, in Liverpool, to 9,000*l.*; Manchester, 5,000*l.*: Bristol, 400*l.*; Glasgow, 550*l.*; Dublin, 300*l.*; London, (Pickled), 400*l.*; in the neighbourhood of the Rivers, 1,800*l.* — Total, 17,450*l.*

Formerly, the greater part of the salmon caught in the Tweed and other Scotch rivers was pickled or kitted, after being boiled, and sent to London, under the name of Newcastle salmon; a little only being brought up fresh during the early spring months. But, about 1790, the plan, suggested by Mr. Dempster of Dunnichen, of packing salmon in boxes with coarsely pounded ice, began to be introduced; and, by this ingenious contrivance, it is now brought quite fresh to London in the summer months from the most distant parts of Scotland and Ireland. This discovery immediately raised the price of salmon in the remoter parts of the country, where it had previously been a drug, almost to the London level, and restricted its consumption within the narrowest limits. "Within memory, salted salmon formed a material article of economy, in all the farm-houses of the Vale of the Tweed, as a considerable portion of their winter stores for family use, inasmuch that in-door servants often bargained that they should not be obliged to take more than two weekly meals of salmon! It could then be bought, fresh caught, in summer, at 2*s.* the fish stone, of nearly 19 pounds' weight, But, from the introduction of ice, enabling the whole to be sent fresh to London at all times, the price hardly falls now below 12*s.* a stone, and is often 30*s.*, and sometimes 42*s.*" — (*Kerr's Berwickshire*, p. 461.)

It is enacted by the 9 Geo. 4. c. 39., that the Scotch rivers are to be shut from the 14th of September to the 1st of February. Every person catching, or attempting to catch, fish in that period, is to forfeit not less than 1*l.*, nor more than 10*l.*, for every offence, besides the nets, boats, or other implements he may have employed. Pecuniary penalties are also imposed on poachers and trespassers; and provision is made for the watching of the rivers. As previously remarked, it is believed that the commencement of the *close time*, as fixed by this act, is too late; and that it should begin by the 25th of August, or, at all events, not later than the 1st of September.

STATEMENT of the prices of Salmon at London, (Freight from Scotland, and Commission deducted,) at different periods of the Season in each Year, from 1822 to 1835:—

Years.	From commencement of Season to 30th April.	From 30th April to 19th June inclusive.	From 19th June to end of Season.
	s. *d.*	*s.* *d.*	*d.*
1822	- 1 6¼ -	- 1 0 -	- 7¼
1823	- 1 7 -	- 0 11¾ -	- 7
1824	- 1 2¼ -	- 0 11 -	- 7
1825	- 1 5¾ -	- 0 11¼ -	- 6
1826	- 1 7 -	- 0 10½ -	- 6
1827	- 1 10 -	- 1 2½ -	- 8
1828	- 1 9½ -	- 1 1½ -	- 6¼
1829	- 1 3¼ -	- 1 1 -	- 7
1830	- 1 3 -	- 0 10¼ -	- 5¾
1831	- 1 6½ -	- 1 1¾ -	- 6½
1832	- 1 4½ -	- 0 9 -	- 4
1833	- 1 5 -	- 1 2¾ -	- 5
1834	- 1 3¾ -	- 0 9½ -	- 5¾
1835	- 0 10½ -	- 0 9 -	- 4

2. *Herring Fishery.* — This department of the fishery business has been prosecuted, at different parts, on the coast of Great Britain, from a very early period. Yarmouth used to be its principal station; and the herring fair, held in that town, was deemed of so much importance in the 14th century, that different statutes were passed for its regulation. — (Stat. Edw. III. an. 31. 35.) But, notwithstanding this early commencement, the fishery made, for a very long period, little or no progress; and, till a comparatively recent epoch, by far the greatest part of the fish taken on our shores, was captured by the Dutch. "*Veniam enim piscandi,*" says Camden, "*semper concesserunt Angli, honore sibi reservato, utilitate vero exteris, quasi per desidiam resignata.*" — (*Brit.* p. 586.) But notwithstanding this sarcastic remark,

and the circulation of the most exaggerated accounts of the advantages derived by the Dutch from the fishery, they were allowed, with but little interruption, to monopolise it until towards the middle of last century. At length, however, a vigorous effort was made to induce the public to set about exploring and cultivating this new and, as it was supposed it would turn out to be, most productive field of industry. In 1749, in pursuance of a recommendation in his Majesty's speech at the opening of parliament, and of a report of a committee of the House of Commons, 500,000*l.* was subscribed for carrying on the fisheries, under a corporation, called "The Society of the Free British Fishery." The Prince of Wales was chosen governor of the society, which was patronised by men of the first rank and fortune in the state. But this society did not trust entirely to its own efforts for success. The duties were remitted upon the salt used in the fisheries; and, besides this reasonable encouragement, a high tonnage bounty was granted upon every buss fitted out for the deep-sea fishery. In consequence, many vessels were sent out, as Dr. Smith has truly stated, not to catch herrings, but to *catch the bounty;* and to such an extent was this abuse carried, that, in 1759, when the tonnage bounty was 50*s.*, the almost incredible sum of 159*l.* 7*s.* 6*d.* was paid as bounty upon *every barrel of merchantable herrings that was produced!* — (*Wealth of Nations*, p. 231. M'Culloch's ed.) But, notwithstanding this encouragement, such was the waste and mismanagement of the company's affairs, that it was speedily destroyed. Dr. Smith says that, in 1784, hardly a vestige remained of its having ever been in existence.

But, notwithstanding this ill success, a new company was formed, for nearly the same objects, in 1786, of which George III. was patron. It has had nearly the same fate. "For a season or two, busses were fitted out by the society; but, if every herring caught had carried a ducat in its mouth, the expense of its capture would scarcely have been repaid. The bubble ended by the society for fishing in the deep-sea becoming a kind of building society, for purchasing ground in situations where curers and fishermen find it convenient to settle; and selling it or letting it in small lots to them, at such advance of price as yields something better than fishing profits." — (See an excellent article on the *Herring Fishery*, in the 11th Number of the *Quarterly Journal of Agriculture.*)

In 1808, a fresh attempt was made for the improvement and extension of the fishery. The act 48 Geo. 3. established a distinct set of commissioners for the superintendence of all matters connected with the fishery, and authorised them to appoint a sufficient number of fishery officers, to be stationed at the different ports, whose duty it is to see that the various regulations, with respect to the gutting, packing, &c. of the herrings, and the branding of the barrels, are duly carried into effect. In 1809, a bounty of 3*l.* per ton was granted on all vessels employed in the deep-sea herring fishery, of above 60 tons burden, but payable only on 100 tons; and, in 1820, a bounty of 20*s.* per ton, which, under certain specified circumstances, might be increased to 50*s.*, was granted on all vessels of from 15 to 60 tons, fitted out for the shore herring fishery; and, exclusively of the bounties on the tonnage, a bounty of 2*s.* a barrel was allowed on all herrings cured, gutted, during the 6 years ending the 5th of April, 1815, and a bounty of 2*s.* 8*d.* a barrel on their exportation, whether cured gutted or ungutted. During the 11 years ending the 5th of April, 1826, the bounty on herrings cured gutted was 4*s.* a barrel.

It is stated, in the article already referred to, that the cost of a barrel of cured herrings is about 16*s.*; half going to the fisherman for the green fish, the other half to the curer for barrel, salt, and labour. The bounty of 4*s.* a barrel was, therefore, equal to *half* the value of the herrings as sold by the fisherman, and to *one fourth* of their value as sold by the curer! In consequence of this forced system, the fishery was rapidly increased. The subjoined account, No. IV., extracted from the *Report of the Commissioners of the Fishery Board*, for 1837, shows the progress it has made since 1811.

On looking at this table, it is seen that the fishery made no progress under the new system till 1815, when the bounty was raised to 4*s.* This is a sufficient proof of the factitious and unnatural state of the business. Its extension, under the circumstances in question, instead of affording any proof of its being in a really flourishing condition, was distinctly the reverse. Individuals, without capital, but who obtained loans sufficient to enable them to acquire boats, barrels, salt, &c., on the credit of the bounty, entered in vast numbers into the trade. The market was most commonly glutted with fish; and yet, the temptation held out by the bounty caused it to be still further overloaded. Great injury was consequently done to those fish-curers who possessed capital, and even the *fishermen* were injured by the system. "Most of the boats employed in the fishery never touch the water but during 6 weeks from the middle or end of July to the middle of September. They are owned and sailed, not by regular fishermen following that vocation only, but by tradesmen, small farmers, farm-servants, and other landsmen, who may have sufficient skill to manage a boat at that season, but who do not follow the sea, except for the 6 weeks of the herring fishery, when they go upon a kind of gambling speculation, of earning a twelvemonth's income by 6 weeks' work." — (*Quarterly Journal*, No. 11. p. 653.)

It has been often said, in vindication of the bounty system, that, by extending the fishery, it extended an important nursery for seamen; but the preceding statement shows that such has not been the effect. On the contrary, it has tended to depress the condition of the genuine fisherman, by bringing a host of interlopers into the field; and it has also been prejudicial to the little farmers and tradesmen, by withdrawing their attention from their peculiar business, that they may embark in what has hitherto been little less than a sort of lottery adventure.

These consequences, and the increasing amount of the sum paid for bounties, at length induced government to adopt a different system; and, by an act passed in 1825, the bounty of 2*s.* 8*d.* on exported herrings was made to cease in 1826, and 1*s.* was annually deducted from the bounty of 4*s.* a barrel paid on gutted herrings, till it ceased in 1830. Time has not yet been afforded to learn the full effect of this measure. We, however, have not the slightest doubt that it will be most advantageous. The following table shows, that, though the quantity of herrings taken and exported in 1829 and 1830 fell off, there was a material increase in 1831, and the succeeding years. This is the more encouraging, as there can be little doubt that the supply must now be proportioned to the real demand; while the genuine fishermen, and those curers who have capital of their own, are no longer injured by the competition of landsmen, and of persons trading on capital furnished by government.

The repeal of the salt laws, and of the duty on salt, which preceded the repeal of the bounty, must be of signal service to the fishery. It is true, that salt used in the fisheries was exempted from the duty; but, in order to prevent the revenue from being defrauded, so many regulations were enacted, and the difficulties and penalties to which the fishermen were in consequence subjected, were so very great, that some of them chose rather to pay the duty upon the salt they made use of, than to undertake compliance with the regulations.

The greater part, by far, of the British herring fishery has been long carried on from different places, principally on the east coast of Scotland, of which Wick, in Caithness, is the principal. — (See p. 313.) Of the 397,737 barrels of herrings, reported by the Fishery Commissioners to have been cured in the year ended 5th of April, 1837, 33,089 were cured at Wick; 32,584 at Fraserburgh; 29,872 in Shetland; 22,790 at Banff; 18,706 at Helmsdale; 19,091 at Rothsay; 15,831 at Lybster, &c. None were cured in the Isle of Man, which was formerly one of the principal seats of the fishery.— (See No. III. of subjoined accounts.)

The Yarmouth fishery, though much fallen off, is still prosecuted to a considerable extent. About 100 sail of fishing-vessels, averaging from 40 to 50 tons each, belong to the port, exclusive of about 50 or 60 vessels that arrive annually from Yorkshire during the herring season. The capital employed is estimated at about 250,000*l.* Lowestoff, 9 miles from Yarmouth, employs about 70 fishing boats, of 40 tons each. The greater number of the herrings taken at Yarmouth are smoked, and are known in London by the name of "Yarmouth bloaters." — (*Report of* 1833, *on Channel Fisheries*, p. 17.)

The herring fishery of Ireland has never been of any material importance. It is only, indeed, in a few places that we meet with any regular fishermen in that country; the minute division of the land, and the dependence so generally placed on it, are very formidable obstacles to the success of the fisheries. Subjoined is a

I. STATEMENT of the Number of Boats and Men engaged on the Coast Fisheries of Ireland in 1836, enumerated by the Officers of the Coast Guard.

COUNTIES.	Decked Vessels.			Half-decked Vessels.			Open Sail Boats.		Row Boats.		Number of Fishermen.
	No.	Tons.	Men.	No.	Tons.	Men.	No.	Men.	No.	Men.	
Dublin, North of the Bay -	85	3,321	645	23	232	128	60	261	41	153	1,207
——— South of the Bay -	36	1,330	144	4	33	22	6	36	24	96	298
Wicklow - - -	39	4,174	156	153	1,425	858	57	246	14	38	1,378
Wexford - - -	1	20	6	77	683	493	209	1,129	229	1,228	2,856
Waterford - -	- -	- -	- -	101	1,668	595	62	301	266	1,260	2,156
Cork - - -	13	302	82	233	3,316	1,316	346	1,698	2,039	10,353	13,738
Kerry - -	1	22	7	44	498	234	421	2,612	610	3,458	6,311
Clare - - -	- -	- -	- -	7	88	35	39	141	834	1,286	1,462
Galway - - -	1	18	4	116	1,125	525	479	2,260	1,376	5,750	8,539
Mayo - - -	- -	- -	- -	4	42	12	12	42	677	3,546	3,768
Sligo - - -	- -	- -	- -	-	- -	- -	10	29	172	995	1,294
Donegal - -	8	130	28	11	61	42	84	289	1,169	6,254	6,613
Antrim (including also the coast to Lough Foyle) -	5	60	15	3	25	9	13	38	242	746	816
Down - - -	13	288	67	83	872	363	23	92	358	1,608	2,305
Louth - - -	15	434	80	11	225	52	1	5	313	1,106	1,378
TOTAL - -	215	7,099	1,234	870	10,892	4,684	1,812	9,179	7,864	37,829	64,119

II. An Account of the Number of Boats, whether decked or undecked, that have been employed in the Year ended 5th of April, 1834, in the Shore-curing Herring and Cod and Ling Fisheries; distinguishing each Station; showing also the Number of Fishermen and Boys by whom the said Boats were manned; the number of Coopers employed; the Number of Persons employed in gutting, packing, re-packing, cleaning or drying the Fish; the number of Labourers; and the Total Number of all such persons; together with the Number of Fish Curers in each District.

Stations.	Number of Boats, whether decked or undecked.	Number of Fishermen and Boys by whom the said Boats were manned.	Number of Coopers employed.	Number of Persons employed in gutting, packing, re-packing, cleaning, or drying the Fish.	Number of Labourers employed.	Total Number of Persons employed.	Number of Fish Curers.
	Number.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*
Ayr, Irvine, and Saltcoats -	88	324	43	54	76	497	22
Barra - - -	82	410	- -	6	- -	416	14
Campbeltown - - -	249	909	22	85	10	1,026	60
Dumfries and Stranraer -	76	294	24	130	20	468	11
Fort William - -	306	761	7	494	- -	1,262	27
Glasgow - - -	- -	- -	48	30	75	153	5
Greenock - - -	264	792	84	194	752	1,822	25
Inverary - - -	151	453	19	250	- -	722	22
Islay - - -	90	257	- -	76	- -	333	26
Loch Broom - - -	402	1,633	11	134	1	1,779	10
Carron and Dunvegan	909	3,636	14	3,446	20	7,116	23
Gilphead - -	268	791	23	173	- -	987	39
Shildag - - -	201	846		- -	- -	846	16
Rothsay - - -	289	867	6	27	304	1,204	15
Stornoway - - -	444	2,218	39	620	309	3,186	10
Tobermory - -	650	2,600	56	1,300	650	4,606	48
Bristol - - -	- -	- -	8	8	7	23	1
Isle of Man - -	363	2,580	12	110	32	2,734	41
Liverpool - -	46	251	34	41	15	341	5
St. Ives - - -	376	1,504	53	823	56	2,436	760
Whitehaven - -	57	203	8	25	14	250	4
Anstruther - - -	152	564	60	140	13	777	14
Banff - - -	82	355	96	597	4	1,051	35
Burntisland - -	188	451	65	300	21	917	16
Cromarty - - -	297	1,188	62	1,608	2,381	5,309	17
Eyemouth - -	142	880	65	597	58	1,600	24
Findhorn - - -	155	622	47	309	18	996	21
Fraserburgh - -	188	888	137	1,601	159	2,785	47
Helmsdale - - -	175	875	74	832	100	1,881	22
Leith - - -	94	470	90	38	111	709	15
Lybster - - -	248	1,006	81	723	138	1,948	47
Orkney, North Isles -	190	771	6	355	2	1,134	5
South Isles -	475	2,149	43	1,395	38	3,625	34
Port Gordon - - -	336	1,715	41	788	13	2,557	26
Shetland, Lerwick -	790	3,364	78	2,142	442	6,026	56
Unst - -	144	813	2	290	5	1,110	26
Walls - -	230	1,271	15	279	79	1,644	29
Stonehaven - - -	152	777	45	313	19	1,154	22
Thurso - - -	106	520	32	290	- -	842	19
Tongue - - -	102	510	29	316	225	1,080	18
Wick - - - - -	553	2,720	30	2,215	305	5,570	99
London, including Dover, Portsmouth, Gravesend, and Yarmouth, from which resident officers have now been withdrawn.	887	5,071	10	- -	- -	5,081	21
North Sunderland -	109	346	7	368	44	765	6
Whitby - - -	183	557	- -	300	641	1,498	25
Totals -	11,284	49,212	1,925	23,972	7,157	82,266	1,831

Exclusive of the above, 303 vessels, of the burden of 10,385 tons, entered inwards during the same year, with 56,615 barrels of herrings cured at sea. Of these vessels 95 entered at Greenock, 63 at Glasgow, 52 at Rothsay, &c.

3. *Pilchard Fishery.*—This is exclusively carried on along the coasts of Cornwall and Devon, particularly the former, its principal seats being St. Ives, Mountsbay, and Mevagissey. The fishery has been said to be in rather a declining state for some years past; but it seems doubtful whether this be really the case. Dr. Borlase mentions that, at an average of the 10 years ending with 1756, the annual export of pilchards amounted to 29,795 hhds. At an average of the 3 years ending with 1832, the annual export was 26,641 hhds.; but in 1832 it amounted to 31,618 hhds. And when it is considered that the trade at the former period, and for long after, was forced by means of a bounty, which, previously to its repeal a few years ago, was as high as 8*s.* 6*d.* a hhd., there would seem to be but slender grounds for thinking that the fishery has really declined. Pilchards are not used in England, except in the counties in which they are taken, where about 3,000 hhds. are retained for home consumption. They are

III. An Account of the Total Number of Barrels of White Herrings which have been cured on board Vessels cleared out for the Fishery, or cured on Shore, in the Year ended 5th of April, 1837; distinguishing the Stations where landed or cured; and distinguishing also the Herrings which were cured gutted, from those cured ungutted.

Stations.	Herrings cured gutted.		Herrings cured ungutted.		Total Herrings cured.
	Gutted and packed within 24 Hours after being caught.	Gutted and packed not within 24 Hours after being caught.	Barrels.	Barrels of Bulk.	
	Barrels.	*Barrels.*			*Barrels.*
Campbeltown	3,606½	-	-	-	3,606½
Dumfries and Stranraer	1,769½	-	-	-	1,769½
Glasgow	8,718½	-	1,098½	764	10,581
Greenock and Ayr, Irvine and Saltcoats	12,264½	-	20	10	12,294½
Inverary and Loch Gilphead	4,334½	-	-	-	4,334½
Loch Broom	449½	-	-	-	449½
Carron and Dunvegan	380	-	-	-	380
Shildag	588	-	-	-	588
Rothesay	19,091	-	-	-	19,091
Stornoway	238	-	-	-	238
Tobermory and Fort William	860	2,517	-	-	3,577
Isle of Man	-	-	921½	20,298	21,219½
Whitehaven	1,231	-	529½	1,129½	2,890
Anstruther	-	1,277	2,129½	-	3,406½
Banff	22,790½	-	-	-	22,790½
Burntisland	40	-	-	706	746
Cromarty	7,458	83	115	-	7,656
Eyemouth	3,835	-	5,955	6,637	16,427
Findhorn	7,264	2	484	-	7,750
Fraserburgh	32,584	114	20,075	858½	53,631½
Helmsdale	18,706	-	1,094	-	19,800
Leith	143½	-	-	109	252½
Lybster	15,831	-	-	-	15,831
Orkney, North Isles	2,033	-	-	-	2,033
South Isles	11,236	-	-	-	11,236
Peterhead	30,224½	14	21,998½	26	52,263
Port Gordon	2,789½	-	-	-	2,789½
Shetland, Lerwick	22,510	-	90	-	22,600
Unst	3,302	-	-	30	3,332
Walls	4,060	-	-	-	4,060
Thurso	5,877	-	20	-	5,897
Tongue	4,058	-	-	-	4,058
Wick	33,089	-	10,822	300	44,211
North Sunderland	4,708	-	6,724	4,716	16,148
Totals	286,060	4,017	72,076½	35,384	397,737½

IV. Account of the Total Quantity of White Herrings cured, branded, and exported, in so far as the same have been brought under the cognisance of the Officers of the Fishery, from the 5th of April, 1810, to the 5th of April, 1837; distinguishing each Year, and the Herrings cured gutted, from those cured ungutted.

Periods.	Total Quantity of Herrings cured.			Total Quantity of Herrings branded.	Total Quantity of Herrings exported.		
	Gutted.	Ungutted.	Total.		Gutted.	Ungutted.	Total.
Years ended 5th April	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*
1811	65,430	26,397½	91,827½	55,662½	18,880	19,253	38,133
1812	72,515½	39,004	1115,19½	58,430	27,564	35,256	62,820
1813	89,900¾	63,587½	153,488¼	70,027½	40,100½	69,625	109,725½
1814	52,931½	57,611	110,542½	38,184½	34,929	83,474½	118,403½
1815	105,372¼	54,767	160,139¼	83,376	68,938	72,367¼	141,305¼
1816	135,981	26,670¾	162,651¾	116,436	81,544½	26,143½	107,688
1817	155,776	36,567½	192,343½	140,018½	115,480½	23,148	138,628½
1818	204,270¼	23,420¾	227,691	183,089½	148,147½	14,192	162,339½
1819	303,777½	37,116½	340,894	270,022½	212,301½	14,860½	227,162
1820	347,190½	35,301	382,491½	309,700½	244,096	9,420	253,516
1821	413,308	28,887¾	442,195¾	363,872	289,445½	5,360	294,805½
1822	291,626½	24,897¾	316,524¼	263,205½	212,890½	2,065½	214,956
1823	225,037	23,832	248,869	203,110	169,459½	985½	170,445
1824	335,450	56,740¾	392,190¾	299,631	238,505½	1,125	239,630½
1825	303,397	44,268¼	347,665¼	270,844½	201,882½	134	202,016½
1826	340,118	39,115¾	379,233¾	294,422½	217,053¾	20	217,073¾
1827	259,171¼	29,324	288,495¼	223,606	165,741	665	166,406
1828	339,360	60,418	399,778	279,317½	210,766	893	211,659
1829	300,242½	55,737	355,979½	234,827	202,813½	3,062	205,875½
1830	280,933½	48,623½	329,557	218,418½	177,776	3,878½	181,654½
1831	371,096	68,274¼	439,370¼	237,085	260,976	3,927	264,903
1832	313,113¾	49,547	362,660¾	157,839½	214,820¼	2,679½	217,499¾
1833	353,684½	63,279¾	416,964¼	168,259½	218,429½	2,255	220,684½
1834	382,677½	68,853¾	451,531¼	178,000½	269,133½	2,960	272,093½
1835	217,242	60,075	277,317	85,079	156,225	2,580	158,805
1836	399,334	98,281	497,615	192,317	270,846	2,547	173,393
1837	290,077	107,660½	397,737½	114,192	187,238	2,027	189,265

N. B.—In the 6 years ending 5th of April, 1815, the bounty on herrings cured gutted was 2*s*. per barrel, while there was a bounty at the same time of 2*s*. 8*d*. per barrel, payable by the excise, on the exportation of herrings, whether cured gutted or ungutted, but which ceased on the 1st of June, 1815. In the 11 years ending 5th of April, 1826, the bounty on herrings cured gutted was 4*s*. per barrel; in the 4 succeeding years the bounty was reduced 1*s*. per barrel each year, till the 5th April, 1830, when it ceased altogether, and has not since been renewed.

mostly exported to Italy; and the imposition of a heavy duty on pilchards in Naples has done more injury to the fishery than the repeal of the bounty. Pilchards are all cured on shore, principally by women. The total capital employed in this department of industry, in boats, nets, &c., has been estimated at from 200,000*l.* to 250,000*l.* — (*Commercial Dictionary*, art. PILCHARDS.)

4. *Oyster Fishery.* — Oysters of excellent quality are found in many parts along the British shores, but principally in the rivers and creeks of Essex and Kent; in Pool harbour, and elsewhere on the coast of Hants and Dorset; at Porth-Einion, in Glamorgan, &c. They are also very abundant on the Mersey shores. Those found at Carlingford, in Ireland, are said to be of a peculiarly delicate flavour. The breeding and fattening of oysters for the London market forms a considerable branch of business. It is principally carried on in Essex and Kent; the rivers Crouch, Blackwater, and Colne being the chief breeding-places in the former, and the channel of the Swale, contiguous to Milton, in the latter. The oysters found in them are not, however, brought immediately to town; but are deposited for a while in *beds* or *layings* in the adjoining creeks, where they are fed and fattened for the market. Exclusive of the oysters bred in Essex and Kent, vast numbers brought from Jersey, Poole, and other places along the coast, are fattened in the beds. The export of oysters from Jersey is very considerable, having amounted, at an average of the 4 years ending with 1832, to 208,023 bushels a year, of which a large portion comes to London. The Jersey fishery employs, during the season, about 1,500 men, 1,000 women and children, and 250 boats. — (*Inglis's Channel Islands*, 2d ed. p. 142.)

Lobsters, of which the consumption in London is immense, are brought from the Shetland Isles, the Yorkshire coast, &c.; but the largest supply comes from Norway.

5. *Cod Fishery.* — This fishery, including under the term not only the fishery of common cod, but of haddock, ling, hake, torsk, &c., is next in importance to that of herring. It is carried on in a great variety of places contiguous to the shores of the British islands; but the most productive and valuable of the adjacent fisheries are those in the neighbourhood of the Shetland and Orkney Islands, and off the shores of Essex, Suffolk, Norfolk, Lincoln, &c. Formerly the principal part of the coal brought to London was taken round the edges of the Dogger bank, or rather in the hollows between it and the Well-bank; and the finest fish is still brought from thence. But, within the last few years, the London market has been principally supplied with cod taken between Yarmouth and the Nore; and, in consequence of its being procured so much nearer home, the average price of cod has fallen from 30 to 50 per cent. under what it was a dozen years ago. — (*Report of* 1833, *on the Channel Fisheries*, p. 85.) This change has occasioned a great increase in the number of fishing smacks belonging to Barking, Gravesend, and other ports on the Thames; while those belonging to Harwich, and some of the more distant ports, have been materially reduced. The cod taken by the fishermen of Shetland and Western Isles is mostly cured dried, but it is partially, also, cured green or in pickle; and it is sometimes, though much seldomer now

than formerly, conveyed alive in welled vessels to London. The haddocks taken on the Aberdeenshire coast, and cured at the village of Finnan, near Aberdeen, are held in the highest estimation all over the kingdom.

The great bank of Newfoundland is the principal station of the distant cod fishery; the fish found on it being not only of excellent quality, but in the greatest abundance. The bank began to be resorted to by fishers early in the sixteenth century. In 1578, France had on the bank of Newfoundland 150 vessels, Spain 120 or 130, Portugal 50, and England from 30 to 50. During the first half of last century, the fishery was principally carried on by the English (including the Anglo-Americans) and the French; but the capture of Cape Breton, and of their other possessions in America, gave a severe blow to the fishery of the latter. The American war divided the British fishery; that portion of it which had previously been carried on from New England being thereafter merged in that of the United States. Still, however, we contrived to preserve the largest share. At an average of the 3 years ending with 1789, we are said to have had 402 ships, 1,911 boats, and 16,856 men engaged in the American fisheries. During the last war, the French being excluded from the fisheries, those of England attained to an extraordinary degree of prosperity; the total value of the produce of the Newfoundland fishery, in 1814, having exceeded 2,800,000*l.* But since the peace, the British fishery on the Newfoundland banks has rapidly declined, and can hardly, indeed, be said, at this moment, to exist. It is now carried on almost entirely by the French and the Americans; the facilities enjoyed by the latter for its prosecution being greater than those of any other people, and the former being tempted to engage in it by the extraordinary encouragement afforded by government. At present the British fishery carried on by the inhabitants of Newfoundland is confined entirely to the shore or boat fishery. But this, though probably not so good a nursery of sailors as the bank fishery, is admitted to be "the most productive of merchantable fish and oil." — (*M'Gregor's British America*, 2d ed. vol. i. p. 206.) The average annual produce of the fisheries of all sorts, including seal, salmon, &c., exported from Newfoundland during the 3 years ended with 1832, is stated by Mr. M'Gregor at 516,417*l.*—(vol. i. p. 161.) A considerable fishery is also carried on from the ports and harbours of Nova Scotia and Cape Breton, New Brunswick, &c. But, next to that of Newfoundland, the principal British fishery is carried on along the coast of Labrador, — its produce being estimated at from 300,000*l.* to 350,000*l.* a year.

The Exportation of Fish from Newfoundland in each of the Years, 1832, 1833, and 1834, was as follows:—

——		1832.	1833.	1834.
Cod, Dry - - -	*Cwt.*	619,177	883,536	763,187
— Wet - - -	*Barrels*	658	3,633	2½
Herrings - - - -	*Boxes*	86	—	—
— - - -	*Barrels*	1,728	2,089	1,623½
Mackarel - - - -	—	477	326	202
Salmon - - - - -	—	2,690	3,256	3,363
Value of Fish exported - -	£	319,265	455,672	443,577

The total produce of the British fisheries, in the various seas and rivers of America, including seal oil and skins, is estimated by Mr. M'Gregor, at an average of the 5 years ending with 1832, at 857,210*l.* a year. — (Vol. ii. p. 596.)

Abstract of the Total Quantity of Cod, Ling, or Hake, Cured, Punched or Branded, and Exported in so far as the same have been brought under the cognisance of the Officers of the Fishery, during the 13 Years ended 5th of April, 1837.

Periods.	Total Quantity of Cod, Ling, or Hake cured.			Total Quantity of Cod, Ling, or Hake punched or branded.		Total Quantity of Cod, Ling, or Hake exported.				
	Cured dried.	Cured in Pickle.		Cured dried.	Cured in Pickle.	Cured dried.			Cured in Pickle.
Year ended 5th April.	*Cwt.*	*Cwt.*	*Barrels.*	*Cwt.*	*Barrels.*	*Cwt.*	*qrs.*	*lbs.*	*Barrels.*
1826 - -	69,136¼	3,634¾	5,621	66,315¾	5,337	7,281	1	14	—
1827 - -	95,161½	9,273	9,025	82,186¾	8,008¼	14,061	2	27	—
1828 - -	82,515¼	6,726¼	6,142¼	74,103¼	6,609¾	13,298	2	0	—
1829 - -	81,321¾	5,786	6,819	73,500¼	6,204	20,387	3	4	—
1830 - -	101,014	5,652¼	8,836¼	92,314¼	8,464	16,369	3	15	—
1831 - -	37,647	- -	2,960½	34,337¼	2,459¼	11,920	1	1	—
1832 - -	50,293	- -	3,779¼	13,879¼	3,230	20,168	3	16	47
1833 - -	56,461½	- -	6,467¼	13,581¼	4,393¾	14,754	1	26	67
1834 - -	52,710½	- -	5,322¼	14,255¼	3,829	16,298	3	0	24
1835 - -	44,152	- -	3,767	9,492	2,236	10,632	0	0	—
1836 - -	38,040	- -	6,276	6,766	3,018	10,992	0	0	—
1837 - -	66,976	- -	7,273	9,589	3,206	10,195	0	0	1½

N. B. — The books of this department do not exhibit the total quantity of cod, ling, or hake cured till the year commencing 5th of April, 1825. The bounty from the commencement of this abstract to the 5th of April, 1830, was near 4*s.* per cwt. for fish cured dried, and 2*s.* 6*d.* per barrel for fish cured in pickle, taken by the crews of vessels or boats not on the tonnage bounty; while the bounty vessels licensed for cod, ling, or hake fishery, on the tonnage bounty, was 50*s.* per ton for tonnage and cargo to the 5th of July, 1826; 45*s.* from thence to the 5th of July, 1827; 40*s.* to the 5th of July, 1828; and 35*s.* to the 5th of April, 1830; when the bounties ceased altogether, and have not since been renewed.

We subjoin the following particulars with respect to the fisheries of Cod, Ling, and Herrings, during the years ended 5th of April, 1836 and 1837: —

1836.

Vessels - - - - - - - - - - - - - - - -		94 Number
Men - - - - - - - - - - - - - - - - -		721 Men
Tonnage - - - - - - - - - - - - - - - -		3,362 Tons
Number of Fish taken or bought - - - - - - -		178,950 Number
Quantity cured, dried - - - - - - - - - - -		6,308 Cwts.
Number of Fish taken, or purchased by Crews of open Boats		1,321,354 Number
Quantity cured, dried - - - - - - - - - - -		31,731 Cwts.
— pickled - - - - - - - - - -		6,276 Barrels
Boats employed in Herring and Cod Fishery - - - -		11,427 Number
Fishermen and Boys - - - - - - - -	49,720	
Coopers - - - - - - - - - - -	1,989	
Persons employed gutting, packing, re-packing, cleaning, and drying the Fish - - - - -	26,038	
Labourers employed - - - - - - - -	7,235	
Total number employed - - -		84,982
Number of Fish-curers - - - - - - - - -		1,916

Quantity of Herrings: —

Cured, gutted - - - - - - - -	399,334 Barrels	
— ungutted - - - - - - - -	98,281 —	
Total - - - - -		497,615 Barrels
— Branded - - - - - - - - - - -		192,317 —
— Exported, gutted - - - - -	270,846 Barrels	
— — ungutted - - - - -	2,547 —	
Total - -, - -		273,393 —

Quantity of Cod, &c. cured, dried		38,040	Cwts.
— — pickled		6,276	Barrels
— Exported, dried		10,992	Cwts.
— — pickled		—	

1837.

Vessels			
Men			
Tonnage			
Number of Fish taken or bought			
Quantity cured, dried			
Number of Fish taken, or purchased by Crews of open Boats		2,487,142	Number
Quantity cured, dried		66,976	Cwts.
— pickled		7,273	Barrels
Boats employed in Herring and Cod Fishery		11,494	Number
Fishermen and Boys	51,907		
Coopers	1,812		
Persons employed gutting, packing, re-packing, cleaning, and drying the Fish	24,360		
Labourers employed	6,550		
Total Number employed		84,629	
Number of Fish-curers		1,904	
Quantity of Herrings:—			
Cured, gutted	290,077	Barrels	
— ungutted	107,660	—	
Total		397,737	Barrels
— Branded		114,192	
— Exported, gutted	187,238	Barrels	
— — ungutted	2,027	—	
Total		189,265	—
Quantity of Cod, &c. cured, dried		66,976	Cwts.
— — pickled		7,273	Barrels
— Exported, dried		10,195	Cwts.
— — pickled		1	Barrel

6. *Turbot Fishery.*—Turbot is rather scarce in the Channel and on the English coasts. By far the largest portion of turbot brought to the London market is taken on the Dutch coast, principally, too, by Dutch fishermen, who sometimes import the fish direct, but who more frequently sell them to English fishermen. The greater part of the ells used in London, and even at Hampton and Richmond, is also brought from Holland.

Immense numbers of sprats and other small fish are annually captured, to be used as manure, on the coasts of Kent, Norfolk, and Essex, but especially the first.

Mackarel are found, in the proper season, in many parts along the coast. The London market is principally supplied with those taken off the shores of Kent and Sussex.

7. *Whale Fishery.*—The English engaged in the Greenland whale-fishery towards the commencement of the seventeenth century, but it was not prosecuted continuously, or on a considerable scale, till so recently as 1750. At that period, however, in consequence of a bounty of 40*s.* a ton being allowed on the vessels fitted out for the

fishery, a good number were despatched, as much certainly in the view of catching the bounty as of catching whales. Deceived by the prosperous appearance of the fishery, parliament imagined that it was firmly established; and in 1777 the bounty was reduced to 30*s*. The effects of this reduction showed the factitious nature of the trade, the vessels engaged in it having fallen off in the course of the next 5 years from 105 to 39! To arrest this alarming decline, the bounty was raised to its old level in 1781; and of course the trade was soon restored to its previous state of apparent prosperity. The hostilities occasioned by the American war reduced the Dutch fishery to less than half its previous amount, and gave a proportional extension to that of England. The bounty which had, in consequence, become very heavy, was reduced in 1787 to 30*s*. a ton; in 1792 it was further reduced to 25*s*.; and, in 1795, it was reduced to 20*s*.; at which sum it continued till 1824, when it ceased.

Altogether there have been about 2,500,000*l*. expended in bounties for the encouragement of the whale fishery; and it is doubtful whether even this enormous outlay, had it been unaccompanied by extrinsic and accidental circumstances, would have established it on the very moderate scale at which it now stands. But the late war totally destroyed the Dutch fishery; and, in addition to this, many of those engaged in the business emigrated to England, bringing with them their capital, industry, and skill. In consequence of this encouragement, the fishery carried on from England became more extensive and valuable than at any former period; so much so, that in 1815 we employed 134 ships of the burthen of 43,320 tons. But since then the fishery has gradually declined; partly, no doubt, in consequence of the competition of the Americans, who have peculiar advantages for carrying it on, but more in consequence of the increasing scarcity of fish, and of the greater difficulty and danger of the voyage. At present it may be questioned whether it does more than pay its expenses. At an average of the last 3 or 4 years, the entire produce of the northern whale fishery may be estimated at about 300,000*l*. a year, — a miserable return for the sacrifices made in forcing and bolstering up the trade!

A remarkable change has taken place in the localities of the fishery. When it began, the whales were found in vast numbers in the seas round Spitzbergen; but being gradually exterminated, and driven from thence, the whale ships followed them to the icy barrier that bounds the Greenland sea on the north. In 1719 the Dutch commenced fishing in Davis's Straits; but they were not resorted to till a comparatively late period by English ships. Even in 1820 by far the larger portion of our ships went to the Greenland seas. These are now, however, comparatively deserted. In 1834 only 7 ships went to Greenland.

The same thing is happening in Davis's Straits that formerly happened in the seas round Spitzbergen. The whales have become much less numerous in the lower part of the Straits; and it is now necessary to pursue them into Baffin's Bay, Lancaster's Sound, and the recently discovered inlets to the west of the Straits, where the risk of loss is said to be considerably greater. At all events, those engaged in the business have recently experienced some very severe losses. In fact, the fishery has for several years past partaken more of the character of a gambling adventure than of a regular industrious pursuit. Sometimes the ships come home with only half a cargo, sometimes they arrive *clean*, or without any fish, and sometimes they are wholly lost. In 1830, of 91 ships that sailed for Davis's Straits, 19 were totally lost, 24 returned clean, or without a single fish; and of the remainder not one had a full cargo, only one or two being *half fished*. The year 1835 was also very unfavourable, several of the ships having been detained, locked in the ice.

There has been a singular change in the ports from which, as well as the places at which, the northern fishery is carried on. London had, for a lengthened period, by far the greater number of ships in the business; but within the last dozen years she has almost entirely withdrawn from it, having, in 1834, only sent out 3 ships. Hull is now the principal seat of the fishery in England, and Dundee and Peterhead in Scotland.

Account of the Northern Whale Fishery in 1834, specifying the Number of Ships sent out by the different Ports, their Tonnage, with the Number of Fish captured, and their Produce in Oil and Whalebone.

Ships.	Tonnage.	Whales taken.	Produce of Oil.	Produce of Whalebone.	
			Tuns.	Tons.	Cwt.
27 Hull	8,906	273	2,696	146	10
2 Whitby	723	16	149	8	0
3 Newcastle	1,131	25	283	17	4
1 Berwick	310	34	290	11	3
3 London	953	22	177	9	10
2 Burntisland	688	25	177	9	10
11 Peterhead	3,076	99	1,093	57	15
6 Aberdeen	1,979	72	801	45	9
8 Dundee	2,789	115	1,035	53	10
3 Montrose	962	20	144	7	17
5 Kirkaldy	1,591	92	743	38	6
5 Leith	1,847	79	699	37	4
76 Vessels.	24,955	872	8,214	441	10

Abstract Account of the Northern Whale Fishery for the Twenty Years ending with 1834.

Number of Ships to Greenland and Davis's Straits.			Total Ships.	Tonnage.	Ships Lost.	Number of Whales.	Tuns of Oil.	Tons of Bone.
Years.	G.	D. S.						
1815	98	48	146	47,148	1	733	10,682	528
1816	101	45	146	46,868	1	1,330	13,590	632
1817	97	53	150	48,084	5	828	10,871	539
1818	94	63	157	50,362	2	1,208	14,482	666
1819	96	63	159	51,082	12	988	11,401	517
1820	102	57	159	50,546	3	1,155	18,745	946
1821	80	79	159	50,709	14	1,405	16,853	923
1822	61	60	121	38,144	8	630	8,663	422

Abstract Account of the Northern Whale Fishery, &c. — *continued.*

Number of Ships to Greenland and Davis's Straits. Years.	G.	D. S.	Total Ships.	Tonnage.	Ships Lost.	Number of Whales.	Tuns of Oil.	Tons of Bone.
1823	55	62	117	36,759	3	2,018	17,074	921
1824	32	79	111	35,013	1	761	9,871	534
1825	21	89	110	34,751	5	500		350
1826	5	90	95	30,414	5	512	7,200	400
1827	16	72	88	28,273	1	1,162	13,186	733
1828	14	79	93	28,665	3	1,197	13,966	802
1829	1	88	89	28,812	4	871	10,672	608
1830	0	91	91	29,396	19	161	2,199	119
1831	8	80	82	28,608	3	451	5,104	273
1832	19	62	81	26,393	5	1,563	12,610	676
1833	3	74	77	25,294	1	1,695	14,508	802
1834	7	69	76	24,955	3	872	8,214	442
Yearly Average -			115¾	37,013¾	5	1,024	11,313	591¾

8. *Southern Whale Fishery.*—This department of the whale fishery began to be prosecuted about the beginning of the American War; and has, for these many years past, been carried on to a considerable extent. The ships engaged in it principally apply themselves to the catch of the *Physeter Macrocephalus*, or spermaceti whale; but large quantities of oil are also obtained from the common whale of the southern seas, and from the sea elephant, a species of marine animal, intermediate between the walruss of the northern seas and the seal. At an average of the three years ending with 1834, the total produce of the southern whale fishery amounted to 477,000*l.* a year. The vessels engaged in it are generally absent from 2 to 3 years. They belong exclusively to London.

Account of the Vessels, with their Tonnage and Crews, employed in the South Sea Fishery since 1817.

Years ending 5th of January.	Entered Inwards.			Entered Outwards.		
	Ships.	Tons.	Men.	Ships.	Tons.	Men.
1818	21	6,481	451	42	14,785	1,201
1819	32	10,940	749	58	18,214	1,643
1820	41	13,682	946	47	14,668	1,345
1821	40	13,470	867	68	19,755	1,827
1822	51	14,910	1,194	55	14,398	1,396
1823	43	12,544	806	44	11,432	1,022
1824	51	15,356	990	59	17,669	1,536
1825	37	11,297	686	31	9,122	796
1826	33	9,480	621	29	7,839	738
1827	36	10,729	720	34	10,429	939
1828	30	9,414	552	33	10,374	902
1829	20	6,326	393	21	7,000	604
1830	29	8,600	509	31	10,997	937
1831	25	8,503	492	32	9,682	924
1832	27	9,870	565	24	8,332	735

The declining state of the trade is obvious from this table. This is a consequence, partly of the growing scarcity of the whales in their old haunts, and of the greater difficulty experienced in their capture, but more of the competition of the Americans, and of the colonists in New South Wales and Van Diemen's Land. The situation of the latter gives them peculiar advantages for the prosecution of the fishery, which they now carry on to a great extent, and with much spirit and success.

9. *Value of British Fisheries.* — There are no means by which to form any accurate estimate of the total annual value of the different fisheries belonging to Great Britain. It must, however, amount to a very large sum, though less, perhaps, than is commonly supposed. Sir John Barrow, in an article on the fisheries, in the new edition of the *Encyclopædia Britannica*, estimates their total value, including foreign as well as domestic, at 8,300,000*l.* a year; but there can be no doubt that this is a very great exaggeration. We are convinced that those who estimate the entire value of the fisheries at 3,000,000*l.* or 3,500,000*l.* a year, will not be within, but beyond the mark.

CHAPTER IV.—MANUFACTURES.

SECT. I. *Circumstances favourable to the Progress of Manufactures and Industry.*

THESE are partly of a moral and political, and partly of a physica description. Of the former class, the most important seem to be the security and free disposal of property; the absence of monopolies, and he non-interference of government in industrious undertakings; the diffusion of knowledge amongst the people; the cordial reception of foreigners; and the emulation and energy inspired by inequality of fortune, and by the gradual increase of taxation: among the more prominent of the physical circumstances conducive to their progress are, supplies of the raw material used in manufactures, with the command of power, that is, of coals, waterfalls, &c. A good deal, also, of the progress of manufactures seems to depend on the advantageous situation of a country for commerce, and on the nature of its climate. We shall briefly notice some of the more prominent of these circumstances.

Moral Circumstances contributing to the Progress of Manufactures.

1. It would be unnecessary to take up the reader's time by enlarging on the necessity of security, and of the free disposal of property to success in manufacturing industry, or, indeed, in any laborious undertaking. Without security there cannot, in fact, be either industry or invention. No man will engage in any undertaking, or exert either his bodily or mental powers, unless he be well convinced that he will be allowed to reap all the advantages accruing from the exertion of his labour, skill, or genius. Any doubt as to this is sure to paralyse all his exertions. And if, owing to the weakness or ignorance of

government, the prevalence of a revolutionary spirit, or any other cause, the security of property were materially impaired, all sorts of industrious undertakings, that did not promise an immediate return, would be forthwith abandoned, and every person possessed of property would endeavour to convey it out of the country. The want of security is, therefore, by far the greatest of all public calamities. Wherever it does not exist, we find nothing but the most abject poverty and barbarism; and, supposing other things to be equal, the wealth and civilisation of nations will be pretty nearly proportioned to the degree of security they respectively enjoy. Every other circumstance conducive to the advancement of industry may exist in a country; but without security these cannot be of any material service. A high degree of security will compensate for many deficiencies; whereas nothing can make up for its want: it is a *sine qua non* of national prosperity.

2. The absence of monopolies, and the non-interference of the government in industrious undertakings, undoubtedly conduce in no ordinary degree to the progress of industry. Every man is always exerting himself to find out how he may best extend his command over the necessaries and conveniences of life; and sound policy requires that he should, so long as he does not interfere with the rights and privileges of others, be allowed to pursue his own interest in his own way. Human reason is, no doubt, limited and fallible; we are often swayed by prejudices, and are apt to be deceived by appearances: still, however, it is certain that the desire to promote our own purposes contributes far more than any thing else to render us clear-sighted and sagacious.—"*Nul sentiment dans l'homme ne tient son intelligence éveillée autant que l'intérêt personnel. Il donne de l'esprit aux plus simples.*" The principle that individuals are, generally speaking, the best judges of what is most beneficial for themselves, is now universally admitted to be the only one that can be safely relied on. No writer of authority has, latterly, ventured to maintain the exploded and untenable doctrine, that governments may advantageously interfere to regulate the pursuits of their subjects. It is their duty to preserve order; to prevent one from injuring another; to maintain, in short, the equal rights and privileges of all. But it is not possible for them to go one step further, without receding from the principle of non-interference, and laying themselves open to the charge of acting partially by some, and unjustly by others.

The most comprehensive experience corroborates the truth of these remarks. The natural order of things has been less interfered with in Great Britain than in most other countries. Since the passing of the famous act of James I., in 1624, for the abolition of monopolies, full scope has been given to the competition of the home producers; and, though the various resources of talent and genius have not been so fully, perhaps, or at least so early, developed as they would have been had there been no restrictions on our intercourse with foreigners, they have been stimulated in a degree unknown in most other countries. France, previously to the Revolution, was divided into provinces, having each peculiar privileges, and separate codes of revenue laws; and in consequence the intercourse between them was subjected to the most oppressive restrictions. In Germany and Spain the same miserable system prevailed; so that they were not only deprived of the freedom of foreign, but even of internal, commerce. The inhabitants of each province being in a great measure isolated from the rest, there was comparatively little competition; and instead of invention and active exertion, there was nothing but routine and sluggish indifference. Holland and the United States have been almost the only countries that have enjoyed the same degree of internal freedom as Great Britain; and the former, notwithstanding the unfavourable physical circumstances under which she is placed, has long been, and still is, the richest country in Europe; while the latter, whose condition is in other respects more favourable, is advancing with giant steps in the career of improvement.

It is sometimes said, that restrictions on industry and commerce cannot be so injurious as has been represented, seeing the progress we have made notwithstanding they have always existed amongst us. The previous details show the weight to be attached to this allegation. The restrictions referred to have been confined to some branches of foreign trade; and, luckily, the freedom allowed to all sorts of industry at home would have insured our advance though the fetters laid on foreign trade had been a good deal more oppressive than they actually have been. But to imagine, as many have done, that these restrictions contributed to accelerate our progress, is the climax of absurdity. Their influence has, in every case, been distinctly and completely the reverse; but, though considerable, it has been insufficient to countervail the advantages resulting from the freedom we otherwise enjoyed.

3. The ability to read, and the diffusion of instruction among all ranks and orders of the people, by the general circulation of books and journals, the establishment of mechanics' institutes, &c., have had a material influence on the advancement of arts and industry. The circumstances in question have had the double advantage of multiplying the means and chances of improvement, and of preventing any invention or discovery, when made, from being engrossed by a few. An uninstructed people, though surrounded by all the means and capacities for the production and accumulation of wealth, being unable to apply them to any useful purpose, are necessarily poor and destitute; whereas an intelligent people, though placed in a comparatively unfavourable situation, never fail, by availing themselves of the powers and energies of nature, and making them subservient to their purposes, to become rich and prosperous. That "knowledge is power," is true in a physical as well as in a moral sense. The more familiar our acquaintance with, and the more complete our command over, natural agents, the greater, of course, must be our command over the necessaries and conveniences of life. In tracing the causes of our progress, it is not possible to appropriate to each the portion belonging to it of a result which is the joint effect of the whole united; but if this could be done, it would be found that no inconsiderable share is fairly ascribable to the extraordinary diffusion of scientific information amongst us.

4. For a lengthened period, the reception given to foreigners in England was any thing but cordial. In most countries, indeed, not in

an advanced state of civilisation, strangers are uniformly the objects of popular dislike; and this feeling seems to have prevailed quite as much in England as any where else. But, notwithstanding the various legal disabilities laid on foreigners, and the ill-treatment they often experienced, their settlement here has been productive of the most advantageous results. The Flemings, invited over and protected by Edward III., gave the first great impulse to the woollen manufacture; and the immigrations from the Low Countries during the persecutions of the Duke of Alva, and from France subsequently to the revocation of the Edict of Nantes, materially forwarded our commerce and manufactures. During the last century the prejudice against aliens lost much of its force; and several of the disabilities under which they formerly laboured have been removed. But, in all that respects the treatment of foreigners, our policy has been decidedly less liberal and enlightened than that of the Dutch. In Holland they have always been received with open arms; and a short residence in the country, and a small payment to the state, entitled them to all the privileges enjoyed by natives. The highest authorities agree, that this was one of the main causes of the extraordinary progress made by the republic in commerce and wealth. "It has always been our constant policy to make Holland a perpetual, safe, and secure asylum for all persecuted and oppressed strangers: no alliance, no treaty, no regard for, nor any solicitation of, any potentate whatever has at any time been able to weaken or destroy, or make the state recede from protecting those who have fled to it for their own security and self-preservation. Throughout the whole course of all the persecutions and oppressions that have occurred in other countries, the steady adherence of the republic to this fundamental law has been the cause that many people have not only fled hither for refuge, with their whole stock in ready cash, and their most valuable effects, but have also settled and established many trades, fabrics, manufactures, arts, and sciences, in this country; notwithstanding the first materials for the said fabrics and manufactures were almost wholly wanting in it, and not to be procured but at a great expense from foreign parts." *

5. We incline to think that the great inequality of fortune that has always prevailed in this country has powerfully contributed to excite a spirit of invention and industry among the less opulent classes. It is not always because a man is absolutely poor that he is perseveringly industrious and economical: he may have already amassed considerable wealth; but he continues with unabated energy to avail himself of every means by which he may hope to add to his fortune, that he may place himself on a level with the great landed proprietors, and those who give the tone to society in all that regards expense. No successful manufacturer or merchant ever considers that he has enough till he be able to live in something like the same style as the most opulent persons. Those immediately below the highest become, as it were, a standard to which the class next to them endeavour to elevate themselves; the impulse extending, in this way, to the very lowest classes, individuals belonging to which are always raising themselves by industry, address, and good fortune, to the highest places in

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* *Proposals for amending the Trade of Holland*, printed by authority in 1756; Eng. ed. p. 12.

society. Had there been less inequality of fortune amongst us, there would have been less emulation, and industry would not have been so successfully prosecuted. It is true, that the desire to emulate the great and the affluent, by embarking in a lavish course of expenditure, is often prematurely indulged in, and carried to a culpable excess; but the evils thence arising make but a trifling deduction from the beneficial influence of that powerful stimulus which it gives to the inventive faculties, and to that desire to improve our condition, and to mount in the scale of society, which is the source of all that is great and elevated. Hence we should disapprove of any system which, like that of the law of equal inheritance established in France, had any tendency artificially to equalise fortunes. To the absence of any such law, and the prevalence of customs of a totally different character, we are inclined to attribute a considerable portion of our superior wealth and industry.

6. We are also disposed to believe, how paradoxical soever such a notion may appear, that the taxation to which we have been subjected has, hitherto at least, been favourable to the progress of industry. It is not enough that a man has the means of rising in the world within his command; he must be placed in such a situation, that, unless he avail himself of them, and put forth all his energies, he will be cast down to a lower station. Now, this is what our taxation has effected: to the desire of rising in the world, implanted in the breast of every man, it superadded the fear of being thrown down to a lower place in society; and the two principles combined produced results that could not have been produced by either separately. Had taxation been carried beyond due bounds, it would not have had this effect. But, though considerable, its increase was not such as to make the contributors despair of being able to meet the sacrifices it imposed by increased skill and economy: and the efforts they made in this view were far more than sufficient for their object; and, consequently, occasioned a large addition to the public industry and wealth, that would not otherwise have existed.

II. *Physical Circumstances contributing to the Progress of Manufactures.*

1. Supplies of the raw material may be classed among the more prominent of this description of circumstances; and those who reflect on the nature, value, and importance of our manufactures of wool; of the useful metals, such as iron, tin, lead, copper, &c.; of leather, flax, and so on; will readily admit that our success in them has been materially facilitated by our possessing abundant supplies of the raw material. It is of less consequence, when the material of a manufacture possesses considerable value in small bulk, whether it be furnished from native resources, or be imported from abroad; though, even in that case, the advantage of having an internal supply, of which we cannot be deprived by the jealousy or hostility of others, is far from immaterial. But no nation can make any considerable progress in the manufacture of bulky and heavy articles, the conveyance of which to a distance necessarily occasions a large expense, unless she have supplies of the raw material within herself. Had we been destitute of

iron ore, lead, and tin, we could never have distinguished ourselves by the magnitude and value of our manufactures of these articles. But any one who reflects on the signal advantage resulting to every branch of manufacturing industry from being able to procure abundant supplies of iron at the cheapest rate, will be convinced that we are under any thing but slight obligations to our exhaustless stores of this mineral.

2. But of all the physical circumstances that have contributed to our extraordinary progress in manufactures and industry, none have had so much influence as our possession of the most valuable coal mines. They have conferred advantages on us not enjoyed in an equal degree by any other country. Our extraordinary success in the manufacture of iron, copper, &c., is not owing so much to our possessing the ores, as to our possessing the coal, by the aid of which they have been smelted and refined. But the paramount importance of coal as a manufacturing agent has been principally manifested since the invention of the steam-engine. Without a cheap and abundant supply of fuel, the engine, as now constructed, would be of comparatively little use. It is, as it were, the hands: but coal is the muscles by which they are set in motion, and without which their dexterity cannot be called into action, and they are of no use. Our coal mines may be regarded as vast magazines of *hoarded* or *warehoused power;* and, unless some such radical change should be made on the steam-engine as should very decidedly lessen the quantity of fuel required to keep it in motion, or some equally serviceable machine, but moved by different means, be introduced, it is not at all likely that any nation should come into successful competition with us in those departments in which steam-engines, or machinery moved by steam, may be advantageously employed.

Since the introduction of the steam-engine, waterfalls have lost much of their value; and unless they be very favourably situated, and of a superior description, we no longer reckon them of any considerable importance.

3. The advantageous situation of the country for commerce, and the nature of its climate, have also powerfully contributed to the perfection of manufacturing industry. Owing to the facilities afforded by our insular situation for maintaining an intercourse with all parts of the world, our manufacturers have been able to obtain supplies of foreign raw materials on the easiest terms, and to forward their own products wherever there was a demand for them. Had we occupied a central internal situation in any quarter of the world, our facilities for dealing with foreigners being so much the less, our progress would have been comparatively slow. But being surrounded on all sides by the sea, that is, by the great highway of nations, we have been able to deal with the most distant as well as with the nearest people, and to profit by all the peculiar capacities of production enjoyed by each. With such advantages on our side, it would have been singular had we not shot ahead of most of our competitors in the race of improvement.

Our climate is peculiarly favourable for all sorts of exertion and enterprise; without being too severe, it is sufficiently so to render comfortable clothing and lodging indispensable; and, consequently, gives rise to wants that are either unknown, or less sensibly felt, in more genial regions. Its inequality, too, by requiring incessant care and attention on the part of the husbandmen, makes them vigilant and active, as well as industrious; and the qualities that are thus naturally impressed on this great class are, through their example, universally diffused.

Mr. Stevenson, in his valuable article on English statistics in the *Edinburgh Encyclopædia*, when enumerating the causes of our extraordinary success in manufactures, lays the greatest stress on the superiority of our machinery, the vast magnitude of our capital, and the extent to which the division of labour is carried amongst us. But this is to mistake effects for causes. The circumstances specified by Mr. Stevenson are, in fact, the means and instruments by which manufacturing industry is immediately carried on; and the real inquiry is, What are the circumstances that have rendered us so abundantly supplied with them? We have endeavoured briefly to answer this inquiry, by stating what we believe to have been the most prominent causes of that extraordinary accumulation of capital, and of that employment of improved and powerful machinery, and subdivided labour, which mark our eminence as a manufacturing people. Still, however, we are inclined to think that a good deal must in these matters be ascribed to chance, or to some lucky accident. Had Hargraves, Arkwright, Watt, or Wedgwood not existed, or been born abroad, it is impossible to say how much it might have affected the state of industry here: but there seem to be sufficient grounds for thinking that it would have been, at this moment, materially different from what it actually is. A good deal, too, depends on priority. A country, town, or district, that has already established and made a considerable progress in a manufacture, acquires, in consequence, an advantage that may enable it successfully to contend with competitors placed under what are naturally more favourable circumstances: its merchants are already in possession of the markets; its inhabitants, being trained to the business, have acquired that peculiar sleight of hand that is necessary to form expert workmen; and they are in this way frequently able to preserve their ascendancy for a lengthened period, and sometimes even to drive those from the field who have a preponderance of natural advantages on their side.

It seems to be the peculiar good fortune of England that, as respects all the great branches of manufacture, she has at once the advantages of priority and of acquired skill and dexterity on her side, as well as the natural advantages already noticed of abundant supplies of the raw material, of inexhaustible beds of coal, and of situation. Cotton is not an exception; for, though the raw material be the product of other countries, the freight upon it is not very considerable, and is but a trifling deduction from the other circumstances that seem to insure our superiority in this department.

To excel in machine making, is to excel in what is certainly the most important branch of manufacturing industry. Superiority in any single branch, except this, may exist simultaneously with great inferiority in many others; but eminence in the manufacture of machinery is almost sure to lead to eminence in every other department.

Mr. Stevenson has laid considerable, though not, as it appears to us, too much, stress on the practice generally adopted in Great Britain, of paying workmen, wherever it is practicable, by the piece, or by the work done, and not by the day. This system gives the workmen an interest in being industrious; and makes them exert themselves to execute the greatest quantity of work in the least space of time. And, in consequence of its prevalence, this practice materially influences even the day labourers; who, to avoid invidious comparisons, make exertions unknown in other countries. Hence, a given number of hands in Great Britain perform much more work than is executed by the same number of hands almost any where else: in fact, if we regard wages in their proper light, that is, if we look upon them as a compensation for the quantity of work done, aud not for the time spent in doing it, they will, we believe, be found to be cheaper in Great Britain than in most other countries.

SECT. II. *Woollen Manufacture.*

Rise and Progress of the Manufacture. — It has been pretty commonly supposed that the woollen manufacture was, for the first time, established in England in the reign of Edward III.; but, though the policy of that able prince contributed powerfully to its advancement, it certainly existed amongst us from the time of the Romans. There are notices in the statute book of "broad cloths 2 yards within the lists," more than 100 years before the date of the measures adopted by Edward III. for its improvement.

Owing to the suitableness of the soil and climate of England for the growth of sheep, the excellence of our wool, the demand for warm clothing, and the ingenuity of our people, it might be fairly presumed that we were, at an early period, distinguished by our proficiency in this manufacture. But, for several centuries after the Conquest, our ancestors were, in this respect, very far behind the Flemings; and, though there can be no doubt that a greater or less supply of coarser articles was always produced at home, it was customary, down to the 16th century, to carry large quantities of English wool to Flanders; whence were brought back in return, not only the finer descriptions of woollen cloths, but most part of the foreign products required for our consumption.

Though without any claim to be entitled its founder, Edward III. certainly did much for the improvement of the manufacture. He had a clear perception of the advantages resulting from the immigration of foreigners, as well by communicating a knowledge of the arts practised abroad, as in exciting a spirit of emulation and invention amongst the native population. Acting on this principle, Edward availed himself, in 1331, of some discontents existing among the Flemish manufacturers to invite them over to England. This invitation was accepted by a number of weavers, dyers, fullers, &c., who settled in different parts of the country, being protected by the vigorous policy of the king from the assaults of the rabble. From this early period down to the present day, the manufacture has always been regarded as of primary importance. In 1337, an act was passed prohibiting the wear of any cloths made beyond seas; and it is supposed that the exportation of English wool was then also interdicted: but the words of the act do not bear this interpretation; the exportation being prohibited only "*till it be otherwise ordered;*" that is, till measures were matured for subjecting it to a duty. In these unsettled and turbulent times prohibitory acts were but little attended to, and the one now referred to was soon after repealed. — (*Smith's Memoirs of Wool*, vol. i. p. 32. and p. 39.) During the reign of Edward III., and for long after, the duties on exported wool formed a large branch of revenue; and, though the manufacturers were exceedingly anxious to have its exportation prohibited, and this was then believed to be good policy, they did not succeed in their object till 1660; when, owing to the increase of industry and commerce, means were found for raising a sufficient revenue independently of the wool duties.

It may, however, be doubted, whether the benefit derived by the manufacturers from prohibiting the export of wool was not more apparent than real: it occasioned a material diminution of the growth of the article; and it is well known, that large quantities were at all times clandestinely exported. Mr. Smith, who has carefully investigated the early history of the manufacture, states, that it made a far more rapid progress during the reign of Elizabeth, when wool might be carried out of the kingdom, than it ever did during any equal period subsequent to the restriction on exportation. Foreign wool began to be imported in small quantities in the 13th century.

At first, the manufacture seems to have been pretty equally distributed over the country. In an insurrection that took place in 1525, more than 4,000 weavers and other tradesmen are said to have assembled out of Laneham, Sudbury, and other towns in Suffolk. The manufacture had been previously introduced into Yorkshire. In 1533, an act was passed (34 and 35 Hen. 8. c. 10.), reciting, that "the city of York, afore this time, had been upholden principally by making and weaving of coverlets, and the poor thereof daily set on work in spinning, carding, dyeing, weaving, &c.;" that the manufacture, having spread into other parts, was "thereby debased and discredited;" and enacting as a remedy for this evil, that henceforth "none shall make coverlets in Yorkshire but inhabitants of the city of York!" This seems, indeed, to have been, at the time, a favourite principle of commercial legislation; for it was enacted, nearly at the same period, that the manufacture should be restricted, in Worcestershire, to Worcester and 4 other towns. Worsted goods, so called from Worsted, now an inconsiderable village in Norfolk, where the manufacture was first set on foot, were produced in the reign of Edward II., or, perhaps, earlier: but Norwich soon after became the principal seat of this branch of the manufacture; and continued to preserve its superiority, till it has been surpassed, within these few years, by Bradford and the contiguous district, in the West Riding of Yorkshire. In an act of Henry VIII. (33 Hen. 8. c. 16.), worsted yarn is described as "the private commodity of the city of Norwich."

But, however objectionable, these statutes may be regarded, if compared with others enacted about the same period, as formed on tolerably sound principles. In proof of this, we may mention that the statute 5 & 6 Edward VI. c. 22. was framed for the express purpose of putting down machinery; while the statute 2 & 3 Philip and Mary, cap. 11. prohibits any *clothier* out of a borough, market town, or corporate town, from having more than *one* loom, and any *weaver* dwelling out of a city from having more than *two* looms; and it also prohibits any white woollen cloths being made, except where they had been made during the 10 preceding years. It further interdicts any one from setting up the trade of a weaver unless he have served a 7 years' apprenticeship to the same; and no weaver dwelling out of a city is to have more than 2 apprentices at a time.

In 1614, an improvement took place in the woollen manufacture of the west of England, by the invention of what is called medley, or mixed cloth: for which Gloucestershire is still celebrated. But in despite of this there were, during the reign of Charles II., many, though probably exaggerated, complaints of the decay of the manufacture; and, by way of encouraging it, an act was passed (30 Car. 2. st. 1. c. 3.), ordering that all dead bodies should be buried in woollen shrouds! This act, the provisions of which were subsequently enforced, preserved its place in the statute book for more than 130 years!

Much has been said about the encouragement formerly afforded by the English legislature to the establishment of manufactures; but those who inquire into the matter will, we apprehend, agree with us in thinking that their chance of success would have been decidedly greater had they been left to shift for themselves without any interference. The acts specified above, and others of a similar description, confining the manufacture within certain limits, were early repealed; but those prohibiting the employment of machinery, and regulating the number of looms, kept their place on the statute book to a recent period, and opposed the most formidable obstacle to the progress and improvement of the manufacture. They were not, as may perhaps be supposed, allowed speedily to fall into disuse; on the contrary, their provisions were every now and then put in execution. So late as 1802, there were serious disturbances in Somersetshire and Wiltshire on account of the manufacturers setting up gig-mills, or machines for raising the nap on cloths; it being contended, that they were proscribed by the act of Edward VI.! Nor was the public rendered fully aware of the real nature and powerful influence of the acts in question till the publication of the *Report on the Woollen Manufacture* by the Commons' Committee, in 1806. Hence, notwithstanding all the circumstances favourable to the manufacture in England, and which, had it been let alone, would have insured its rapid advancement, it was long in a very backward and depressed state. The Dutch and Flemings retained a decided superiority over the English till the end of the 17th century. It was not, indeed, till 1668, when some immigrants from Flanders settled in England, that we succeeded in producing any of the finest cloths, or those made entirely of Spanish wool, without the admixture of any wool of an inferior quality.—(*Memoirs of Wool*, vol. i. p. 229, &c.)

The statute of Edward VI., for the discouragement of machinery, seems, combined no doubt with other circumstances, to have been as completely successful as any one of its promoters could have desired. "From the most remote period of the woollen manufacture, until the latter end of the last century, or about the year 1780, very few, if any, mechanical improvements had been introduced into it. During the whole time the various processes were carried on nearly in the same manner, but with greater or less skill, and were employed upon materials more or less valuable. The carding and spinning of wool, and the weaving and finishing of cloth, in the early part of the reign of George III., were effected by the same machines as in the reign of Edward III., which, probably, were similar to those of the ancient Romans, but more rude in their construction. In an art which had seen so many centuries roll on without any change, it did not appear possible to the manufacturer that any improvement could be effected; and had not the genius of Hargraves and Arkwright changed entirely the modes of carding and spinning cotton, the woollen manufacture would probably have remained at this day what it was in the earliest ages of civilised society." — (*Rees's Cyclopædia*, article "Wollen Manufacture.")

But the astonishing improvements made in the cotton trade roused, at length, the dormant energies of the woollen manufacturers, and stimulated them to make something like corresponding efforts. In consequence machinery began, in the interval between 1785 and 1800, to be every where employed in the carding and spinning of wool, until the performance of these processes by hand-cards and spinning-wheels was wholly abandoned. The repeal of the acts of Edward VI. and of Philip and Mary, in 1807, paved the way for the general introduction of gig-mills, shearing-mills, brushing-mills, &c.

The power-loom is, as yet, but little introduced into the cloth trade, and is employed only in weaving the finer description of goods. This is supposed to be owing to the loose way in which the yarn is spun; which, while it facilitates the process of felting, makes it unsuitable for the power-loom. — (*Report on Yorkshire*, Factory Commission, C. i. p. 168.)

Towards the end of the 17th century, Mr. Gregory King, and Mr. Davenant (*Davenant's Works*, Whitworth's ed. vol. ii. p. 233.) estimated the value of the wool shorn in England at 2,000,000*l.* a year; and they supposed that the value of the wool (including that imported from abroad) was quadrupled in the manufacture; making the entire value of the woollen articles annually produced in England and Wales 8,000,000*l.* of which about 2,000.000*l.* were exported. In 1700 and 1701, the official value of the woollens exported amounted to about 3,000,000*l.* a year. Owing to the vast increase in the wealth and population of the country, the manufacture must have been very greatly extended during the last century; but the increase in the amount of exports was comparatively inconsiderable. At an average of the 6 years ending with 1789, the annual official value of exports was 3,544,160*l.* a year; being an increase of only about 540,000*l.* on the amount exported in 1700. The extraordinary increase of the cotton manufacture soon after 1780, and the extent to which cotton articles then began to be substituted for those of wool, though it did not occasion any absolute decline of the manufacture, no doubt contributed powerfully to check its progress. In 1802, the official value of the exports rose to 7,321,012*l.*; being the largest amount they ever reached till 1833, when they amounted to 7,788,842*l.* During the 5 years ending with 1836, every part of the manufacture was in a state of unexampled improvement and extension, notwithstanding the price of wool was, for the greater part of this period, very high; but in consequence of the revulsion in the trade with the United States, the manufacture declined considerably in 1837. No doubt, however, this decline will be but of temporary duration. The official, and the declared or real values of the woollen manufactures exported from the United Kingdom since 1831, have been as under.

	1831.	1832.	1833.	1834.	1835.	1836.	1837.
Official value of woollen manufactures exported -	£ 6,097,558	6,544,576	7,788,842	6,514,703	7,406,809	7,541,265	4,681,625
Declared, or real, value of ditto - - - -	5,227,701	5,239,992	6,294,432	5,736,871	6,840,511	7,639,354	4,655,977

The subjoined account shows the quantity and value of the British woollen manufactures exported in 1833 and 1834, and their distribution. It sets the paramount importance of the market of the United States in a very striking point of view: —

Account of the Quantity and Value of the Woollen Manufactures exported during 1833 and 1834; specifying the Countries to which they were exported, and the Quantity and Value of those exported to each.

Countries.	1833.					1834.				
	Entered by the Piece.		Entered by the Yard.		Hosiery, and Small Wares. Declared Value.	Entered by the Piece.		Entered by the Piece.		Hosiery, and Small Wares. Declared Value.
	Quantities.	Declared Value.	Quantities.	Declared Value.		Quantities	Declared Value.	Quantities.	Declared Value.	
	Pieces.	L.	Yards.	L.	L.	Pieces.	L.	Yards.	L.	L.
Russia - - - -	33,591	89,498	26,059	2,861	713	31,286	100,164	38,503	4,633	606
Sweden - - - -	4,253	4,970	1,093	121	121	7,212	9,884	2,574	267	134
Norway - - - -	4,129	11,068	7,274	521	732	4,210	11,601	13,911	11,114	839
Denmark - - - -	960	1,526	3,991	323	185	745	1,586	6,467	595	254
Prussia - - - -	14	50	520	27	73	43	173	1,510	121	12
Germany - - - -	469,290	571,426	684,748	52,207	11,223	408,813	513,761	582,091	42,463	9,727
Holland - - -	105,445	230,366	619,677	39,471	12,286	91,514	217,254	377,107	27,710	13,971
Belgium - - - -	44,905	74,082	363,083	21,703	12,847	60,057	105,087	294,062	18,987	5,899
France - - - -	23,725	50,909	53,387	4,251	784	22,775	40,231	94,401	6,512	510
Portugal, Proper - - -	36,736	125,373	80,692	6,551	2,284	68,301	238,614	140,225	11,317	2,410
Azores - -	3,151	10,066	5,194	485	59	3,667	13,030	4,974	408	69
Madeira - -	1,137	4,268	2,537	247	25	1,055	4,488	2,662	343	71
Spain and the Balearic Islands	53,532	101,878	33,999	4,257	1,257	23,240	59,239	61,973	3,460	134
Canaries - - -	833	3,417	12,373	1,084	77	1,387	4,163	5,969	464	67
Gibraltar - - - -	4,395	16,770	29,632	2,029	637	3,920	17,820	58,533	5,096	1,257
Italy and the Italian Islands -	103,484	204,970	135,184	12,737	2,805	120,392	228,881	306,066	20,523	2,839
Malta - - - -	5,024	11,413	10,074	655	400	4,380	11,632	19,874	1,283	594
Ionian Islands - -	482	2,546	1,689	222	241	710	3,135	4,035	355	217
Turkey and Continental Greece (exclusive of the Morea) -	7,209	16,790	22,130	2,785	527	8,764	25,779	2,580	3,076	484
Morea and Greek Islands -	133	885	307	29	-	777	1,669	35,794	51	2
Egypt (Ports on the Mediterranean) - - -	75	656	90	5	12	409	1,598	1,108 2,580	355	25
Tripoli, Barbary, and Morocco	-	-	-	-	-	661	681	500	34	61
Western Coast of Africa -	1,029	2,496	3,400	142	1,365	1,513	3,159	2,131	184	1,390
Cape of Good Hope - -	13,553	38,185	54,375	3,463	956	11,549	31,860	80,238	5,994	1,575
Cape Verd Islands - -	-	-	-	-	-	-	-	-		
St. Helena - - -	34	342	2,804	133	25	211	1,104	8,228	511	6
Mauritius - - -	349	1,400	5,377	457	156	1,207	5,239	8,032	661	40
Isle of Bourbon - -	-	-	-	-	-	31	282	200	15	
East India Company's Territories and Ceylon - -	270,678	782,280	156,403	13,192	3,109	45,301	218,559	284,416	24,524	1,173
China - - - -	-	-	-	690	90	139,336	582,216	4,990	625	2,12
Sumatra and Java - -	32,345	79,795	8,700	-	-	8,139	44,274	8,302	816	45
Philippine Islands - -	24,723	82,177	-			2,719	11,605	-	-	35
New South Wales, Van Diemen's Land, Swan River, New Zealand, and South Sea Islands - - -	8,472	36,481	209,667	13,889	3,812	10,515	42,751	239,609	18,104	5,408
Ports of Siam - -	-	-	-	-	-	438	1,077			
British North American Colonies - - - -	100,935	280,532	972,556	65,437	30,909	65,730	193,081	689,587	50,578	24,696
British West Indies - -	28,588	81,397	167,938	12,101	8,603	26,500	77,582	227,983	15,321	9,405
Hayti - - - -	3,117	13,147	5,290	499	30	4,591	10,320	7,162	379	4
Cuba and other Foreign West Indies - - -	11,985	33,041	161,061	11,754	1,377	21,077	65,569	218,898	16,545	6,734
United States of America -	785,991	1,934,677	3,117,191	247,445	83,285	545,928	1,450,413	2,238,134	214,419	62,102
Mexico - - -	9,050	41,633	13,987	2,275	74	13,769	54,045	22,565	2,872	570
Guatemala - - -	-	-	220	85	-	26	340	5,450	344	
Columbia - - -	2,988	10,990	14,305	1,308	6	2,965	14,440	21,164	1,658	153
Brazil - - - -	89,107	253,128	231,858	17,414	4,027	69,944	243,826	230,662	19,795	4,679
States of the Rio de la Plata -	23,337	79,231	65,269	5,640	3,052	36,673	172,393	112,124	10,781	4,801
Chili - - - -	29,605	164,716	84,819	10,501	1,318	16,143	92,159	63,022	6,931	1,640
Peru - - - -	19,168	59,453	19,918	1,857	377	15,471	60,685	49,028	3,463	529
Isles of Guernsey, Jersey, Alderney, and Man - -	6,286	25,998	66,740	7,535	2,182	5,992	29,659	82,303	7,948	2,747
Total -	2,384,122	5,533,936	7,455,611	568,448	192,048	1,910,086	5,017,108	6,689,147	551,635	168,128

Account of the Quantity and Real Value of British Woollen Manufactures exported from the United Kingd in the Year 1837, specifying the Countries to which they were exported, and the Quantity and Value of the exported to each.—(Parl. Paper, No. 340. Sess. 1838.)

Countries to which exported.	Cloths of all Sorts.	Napped Coatings, Duffels, &c.	Kerseys.	Baizes of all Sorts.	Stuffs, Woollen or Worsted.	Flannel.	Blankets and Blanketing.	Carpets and Carpeting.	Woollens mixed with Cotton.	Hosiery; viz. Stockings, Woollen or Worsted.	Hosiery not otherwise described, Rugs, Coverlids, Tapes, &c.	Declared Value of British W Manufactures exported from U. K.
	Pieces.	*Pieces.*	*Pieces.*	*Pieces.*	*Pieces.*	*Yards.*	*Yards.*	*Yards.*	*Yards.*	*Doz. Pairs*	*L.*	*L.*
Russia -	2,691	9	219	10	33,884	6,902	9,790	13,424	20,162	157 0	146	105,139
Sweden -	85	- -	33	1	7,269	802	762	4,152	2,409	151 0	155	14,191
Norway -	457	28	123	84	2,690	3,503	1,122	48	800	155 0	251	10,645
Denmark -	87	10	12	- -	8,56	12	360	720	184	- -	161	2,842
Prussia -	15	- -	1	- -	9	337	100	- -	- -	- -	- -	92
Germany -	6,073	11,909	3,824	375	387,373	351,274	11,140	46,951	264,557	1,847 0	9,212	725,685
Holland -	1,336	5,165	821	13,906	85,964	238,229	1,365	33,565	35,104	13,066 0	5,683	263,176
Belgium -	8,797	4,415	309	83	59,748	242,712	3,560	8,332	100,754	8,425 6	1,679	146,485
France -	540	306	261	52	18,505	11,655	880	12,554	24,686	28 0	1,609	65,539
Portugal, Azores and Madeira -	22,380	4,512	1,313	10,883	23,030	16,218	5,204	7,375	35,950	83 0	1,927	291,527
Spain and the Canaries -	1,172	24	99	1,535	12,179	4,634	7,155	2,349	1,594	96 0	130	62,139
Gibraltar -	4,238	79	383	189	7,251	7,762	820	1,497	48,972	324 0	764	47,882
Italy -	8,496	- -	1,195	- -	66,913	6,304	2,834	25,362	106,000	343 0	3,117	178,655
Malta - -	575	- -	62	20	1,490	568	300	72	3,800	108 0	39	7,477
Ionian Islands -	105	20	16	- -	528	4,037	360	282	10	518 0	270	5,165
Turkey and Continental Greece	825	24	51	7	4,702	22[illegible]	800	7,405	1,660	18 0	235	14,629
Morea and Greek islands	- -	- -	- -	- -	12	15[illegible]	- -	- -	- -	- -	40	89
East Indies and China -	66,002	- -	165	345	77,912	72,078	44,188	4,534	38,140	859 0	5,904	480,081
New South Wales, Van Diemen's Land, Swan River, and Southern Australia. -	5,363	18	681	159	4,297	67,916	186,226	35,232	10,831	2,290 0	5,515	75,680
Cape of Good Hope -	4,452	517	1,023	820	10,794	25,991	17,170	7,425	14,466	941 0	2,296	69,992
Other parts of Africa -	1,702	- -	15	20	3,734	2,246	5,700	510	1,930	276 0	1,149	18,744
British Colonies in North America -	52,009	329	598	197	83,287	354,467	341,352	132,609	46,460	18,345 8	18,175	392,079
—— West Indies	9,735	143	216	5,751	16,991	56,813	197,578	3,306	11,660	2,984 6	9,396	125,702
Foreign West Indies -	3,759	8	75	40	8,219	6,000	138,998	1,016	5,386	- -	1,770	58,536
United States of America -	126,946	59	4,621	95	127,381	85,134	1,291,112	276,776	136,939	19,949 4	16,405	1,045,279
Brazil -	24,233	20	894	6,116	18,547	1,960	152,193	11,951	66,911	852 0	4,366	182,428
Mexico and the States of South America -	30,676	- -	5,925	2,736	23,920	24,036	17,010	91,984	73,330	3,065 0	3,072	467,858
Isles—Guernsey, Jersey, Alderney and Man	2,893	79	15	101	3,563	83,754	23,624	24,633	86	89 0	2,387	45,06
Total -	387,785	23,605	22,930	43,477	1,041,636	1,685,457	2,431,683	753,964	1,051,972	74,947 0	92,617	4,655,977

Imports of Foreign Wool.—We have already seen (*antè*, p. 496.), that the entire produce of British and Irish wool may be estimated at about 500,000 or 520,000 packs of 240 lbs. each. But, exclusive of this, we use large supplies of foreign wool, English wool not being suitable, at least without an intermixture of foreign, for various departments of the manufacture. Formerly the principal part of our imports came from Spain; but the late King of Saxony, when elector, introduced the breed of Merino sheep into his dominions, and exerted himself to promote their growth. His praiseworthy efforts were crowned with the most signal success. The Merino sheep seem to succeed better in Saxony, and other German states, than in Spain; and since the peace of 1815, the imports from the latter have been inconsiderable compared with those from the former. The Australian colonies, also, have recently been rising into very great importance as wool-growing countries. We subjoin

Account of the Quantity of Sheep and Lambs' Wool imported into the United Kingdom in the year 1837; specifying the Countries from which it came, the Quantity brought from each, the Quantity that paid a Duty of one Penny per Pound, and the Quantity that paid a Duty of one Halfpenny per Pound; of the Quantity of Foreign Wool re-exported during the same Period, and the Countries to which it was sent, and of the Quantity remaining warehoused under Bond on 5th January, 1838. — (*Parl. Paper*, No. 340. Sess. 1838.)

1837.

Quantities of Sheep and Lambs' Wool imported into the United Kingdom from

	Lbs.
Russia	6,114,945
Norway	520
Denmark	516,227
Prussia	192,608
Germany	19,705,492
Holland	251,657
Belgium	97,622
France	149,339
Portugal	510,075
Spain	2,244,817
Gibraltar	631,666
Italy	1,314,407
Malta	13,188
Turkey	2,277,775
Syria	59,979
Morocco	128,323
Cape of Good Hope	468,011
St. Helena and Ascension	2,481
Mauritius	13,239
East India Company's Territories	1,880,741

	Lbs.
New South Wales	4,606,915
Van Diemen's Land	2,453,610
British North American Colonies	4,814
British West Indies	4,322
United States of America	237,380
Columbia	42
Brazil	174
States of the Rio de la Plata	2,207,951
Chili	376,217
Peru	1,914,751
Guernsey and Jersey	420
Foreign Wool	48,379,708
Produce of the Isles of Guernsey, Jersey, and Man	8,584
Total quantity imported	48,388,292

Quantity of Foreign Sheep and Lambs' Wool retained for Home Consumption.

	Lbs.
Charged with duty, at 1*d.* per lb.	22,554,385
Ditto - - at ½*d.* per lb.	10,529,141
Ditto - - at 6*d.* per lb., (being Red Wool)	2,611
Duty free (being the produce of British possessions	9,429,762
Total quantity retained for home consumption	42,515,899

Quantities of Foreign Sheep and Lambs' Wool re-exported. — To

	Lbs.
Germany	52,012
Holland	128,938
Belgium	1,174,769
France	1,018,080
Gibraltar	1,428
Italy	70,139
British N. American Colonies	9,167

	Lbs.
United States of America	372,143
Isles of Guernsey, Jersey, and Man	4,676
Total quantity re-exported	2,831,352

Quantity of foreign sheep and lambs' wool remaining housed under bond on 5th January, 1838 - - - 9,078,267 lbs.

During the same year there were exported 2,647,874 lbs. British wool, and 2,513,718 lbs. woollen in worsted yarn.

Value of the Manufacture.—Number of Persons employed.—The most discordant estimates have been given as to both these points. For the most part, however, they have been grossly exaggerated. In a tract published in 1739, entitled *Considerations on the Running*

(*Smuggling*) *of Wool*, the number of persons engaged in the manufacture is stated at 1,500,000, and their wages at 11,737,500*l.* a-year. Dr. Campbell, in his *Political Survey of Great Britain*, published in 1774, observes, " Many computations have been made upon this important subject, and, amongst others, one, about 30 years since, which, at that time, was thought to be pretty near the truth. According to the best information that can be obtained, there may be from 10,000,000 to 12,000,000 sheep in England — some think more. The value of their wool may, one year with another, amount to 3,000,000*l.*; the expense of manufacturing this may probably be 9,000,000*l.*; and the total value 12,000,000*l.* We may export annually to the value of 3,000,000*l.*, though one year we exported more than 4,000,000*l.* In reference to the number of persons who are maintained by this manufacture, they are probably upwards of 1,000,000. Sanguine men will judge these computations too low, and few will believe them too high." —(Vol. ii. p. 158.) But the moderation displayed in this estimate was very soon lost sight of. In 1800 the woollen manufacturers objected strenuously to some of the provisions in the treaty of union between Great Britain and Ireland, and were allowed to urge their objections at the bar of the House of Lords, and to produce evidence in their support. Mr. Law (afterwards Lord Ellenborough), the counsel employed by the manufacturers on this occasion, stated, in his address to their lordships, on information communicated to him by his clients, that 600,000 packs of wool were annually produced in England and Wales, worth, at 11*l.* a pack, 6,600,000*l.*; that the value of the manufactured goods was 3 times as great, or 19,800,000*l.*; that not less than 1,500,000 persons were immediately engaged in the operative branches of the manufacture; and that the trade collaterally employed about the same number of hands. — (*Account of the Proceedings of the Merchants, Manufacturers, &c.* p. 34.)

It is astonishing that reasonable men, conversant with the manufacture, should have put forth such ludicrously absurd statements. We have already seen that the quantity of wool produced in England and Wales in 1800 did not really amount to 400,000 packs; and the notion that *three* out of the *nine* millions of people then in the country were directly and indirectly employed in the manufacture is too ridiculous to deserve notice, though it was generally acquiesced in at the time. — (See *Middleton's Survey of Middlesex*, 2d ed. p. 644.; *Adolphus's Political State of the British Empire*, vol. iii. p. 236.)

Mr. Stevenson, who is one of the very few writers on British statistics to whose statements much deference is due, has given the following estimate of the value of the woollen manufactured goods annually produced in England and Wales, and of the interest, &c. of the capital, the wages, and the number of persons employed in the manufacture: —

Total value of manufactured articles -		£18,000,000
Value of raw material - - -	£6,000,000	
Interest on capital, sum to replace its wear and tear, and manufacturers' profits - -	2,400,000	
Wages of workmen - - -	9,600,000	
		£18,000,000

Number of people employed, 480,000, or, perhaps, 500,000.

But even this estimate requires to be materially modified. Since 1815, when it was made, the manufacture has materially increased. This is evinced, as well by the increase in the growth and in the importation of wool, as by the increase of population and of the exports of of cloth and stuffs. The annual production of wool in Great Britain may, at present, be estimated at about 490,000 packs, or 117,600,000 lbs.; to which adding 30,000,000 lbs. as the average amount of imports, the whole will be 147,600,000 lbs. The value of the wool must, of course, vary from year to year with the variations of its price; but we shall seldom be far wrong if we estimate it, at a medium, at about 7,500,000*l.* a-year. Now, the best practical authorities agree in opinion with Mr. Stevenson, that the value of the finished article may be taken at about 3 times the value of the raw material; making, on this hypothesis, the entire value of the manufacture 22,500,000*l.*, which we are disposed to think is pretty near the mark. There can be no doubt, however, that Mr. Stevenson's distribution of the items that make up the value of the manufactured goods is essentially erroneous. According to our information, they may be stated as follows:—

Raw material	£7,500,000
Oil, soap, dye-stuffs, &c.	1,600,000
Wear and tear of capital, and profit	4,650,000
Wages	8,750,000
Total value of manufactured articles	£22,500,000

At present the average wages of the people employed in the different departments of the business may be taken at about 26*l.* a year, making the total number employed 334,600. And, however small this may look, as compared with former estimates, we believe it is fully up to the mark, if not rather beyond it.

Notwithstanding the carding engine, the spinning frame, the gig or raising machine, the shearing machine, brushing machine, &c., have been mostly introduced since 1790, it is the opinion of some well-informed manufacturers, that as many hands are at present required to produce the same quantity of cloth as at the last mentioned epoch. This result, so different from what might be expected, is accounted for by the fact, that a great deal more work is now expended upon the cloth; the appearance of which has been vastly improved.

In 1793 cloth of a *medium quality*, worth at the time about 13*s.* a yard, was made of the best English wool. In 1815 middling cloth was made of Spanish wool, and cost 16*s.* or 17*s.* a yard; while in 1832 similar cloth was made of German, and cost about 12*s.* a yard: but, owing to the improvement of the manufacture, cloth produced in 1832, though not actually finer than that produced in 1793, had a great deal better appearance; so much so, that we have been assured by undoubted judges, that cloth worth only 10*s.* a yard in the former year looked quite as well as cloth worth 13*s.* in the latter. The deterioration in the quality of English wool, occasioned by the farmers having laboured to increase the carcass, though at the expense of the fleece, is the reason that it is now seldom used, unless mixed with foreign wool in the manufacture of the finer cloths.—(*Private Information.*)

Distribution of the Manufacture.—Factory and domestic Systems, &c.—The principal seats of that branch of the manufacture which is especially denominated *woollen* are the West Riding of Yorkshire, and the counties of Gloucester, Wilts, and Somerset. *Worsteds* used to be principally manufactured in Norfolk; but they are now produced at Bradford, Halifax, and Leeds, but especially the first, to a much greater extent than in Norfolk. *Stockings* are mostly made in Leicestershire.

The manufacturing district of the West Riding of Yorkshire being, with the exception of that of Lancashire, by far the most important of any in the kingdom, extends from north to south about 40, its mean width being about 20, miles, including an area of nearly 800 square miles; but this space comprises the hardware manufacturing district contiguous to Sheffield, as well as the clothing district. The latter commences below Craven, and extends over a tract of which Leeds, Bradford, Halifax, Huddersfield, and Wakefield, are the principal centres. Cloth is the chief article manufactured in this district, the greater part being made in the neighbourhood of Leeds, Wakefield, Huddersfield, and Saddleworth. Leeds, in particular, is the grand mart for coloured and white broad cloths. The former, which are usually called *mixed cloths*, are made wholly of dyed wool. The mixed cloth manufacturers reside partly in the villages belonging to the parish of Leeds, but chiefly at Morley, Gildersome, Adwalton, Driglington, Pudsey, Farsley, Calverley, Eccleshill, Idle, Baildon, Yeadon, Guiseley, Rawden, and Horsforth, in or bordering upon the vale of the Aire, principally to the west of Leeds; and at Batley, Dewsbury, Osset, Horbury, and Kirkburton, west of Wakefield, in or near the valley of the Calder. Very few mixed cloth manufacturers are to be found to the east and north of Leeds, and there are but few in the town itself. White cloth is principally manufactured at Alverthorpe, Osset, Kirkheaton, Dewsbury, Batley, Birstal, Hopton, Mirfield, Eccleshill, Cleckheaton, Bowling, and Shipley, a tract of country forming an oblique belt across the hills that separate the vale of the Calder from the vale of the Aire, beginning about a mile west of Wakefield, leaving Huddersfield and Bradford a little to the left, terminating at Shipley on the Aire, and not coming within less than 6 miles of Leeds on the right. The districts of the mixed and white cloth are in general distinct and separate, but in some places, particularly at their south-east and south-west extremities, they run into each other. Flannels and baizes are the principal woollen articles manufactured in and near Halifax; but cloth, especially of the kind used by the army, is also largely made. The blanket and flushing line lies between Leeds and Huddersfield. Worsted spinning is carried on upon a very large scale, and to the exclusion of almost every thing else, at Bradford; stuffs being made in its vicinity, and in Halifax and Leeds. Narrow cloths are made in and near Huddersfield. Saddleworth furnishes broad cloths of nearly equal fineness to those of the west of England, with kerseymeres, &c. White cloths are made at Wakefield; but it is principally distinguished by its wool-market, and the superior skill of its cloth-dyers. In the neighbourhood of Batley and Dewsbury are establishments called *shoddy mills*, employed in the manufacture of yarn from old woollen rags and refuse goods, of which considerable quantities are imported. A little new wool is usually intermixed with the old. The cloth answers sufficiently well for padding, and other purposes of that sort.

Rochdale, in Lancashire, may be almost considered as forming a part of the woollen district of the West Riding, to which it is contiguous, being, in fact, within the parish of Saddleworth. Its manufactures consist principally of baizes, flannels, kerseys, and broad cloths. They are very extensive, and employ a great number of hands.

It is impossible accurately to ascertain the proportion which the woollen manufacture of Yorkshire bears to that of the rest of the kingdom; but we have been assured, by those well qualified to give an opinion on such a point, that it is fully *three fourths* of the whole; and this statement seems to be completely borne out by the returns obtained from the factory inspectors. From these it appears that, of 1,102 woollen factories, employing 65,461 work-people, at work in England in 1834, 601 factories and 40,890 individuals belonged to the West Riding.

Halls have been established for the sale of cloth at Leeds, Halifax, Bradford, Huddersfield, &c., which are attended, on the public market-days, by thousands of the smaller class of manufacturers. These halls are divided into long walks or galleries, consisting of two rows of stands, each of which is marked with the name of the individual to whom it belongs, or by whom it is occupied. On these the cloth is exposed for sale; and, when the market opens, the manufacturers take their stations at the stands behind their goods; the merchants, or buyers, passing to make their purchases through the avenues between the rows. The time during which the halls are open is limited usually to an hour or an hour and a half; and, during that brief period, purchases to a very large extent are often completed. At Leeds there are two large halls. That for mixed cloth was erected in 1758, and has about 1,800 stands. The white cloth hall is of later construction, having been built in 1775: it has 1,200 stands. These halls are appropriated exclusively to the use of those who have served regular apprenticeships to the business of cloth making. The halls at Bradford, Halifax, &c., though large and commodious, are inferior, in point of magnitude, to those of Leeds. All of them are managed by trustees; and most of the stands are said to be the freehold property of those by whom they are occupied.

A good deal of cloth is, however, produced and sold, in the districts referred to, without passing through the halls. This is effected by the merchants giving out samples to the manufacturers, and getting the cloth sent direct to their warehouses.

All the cloth sold in the halls is rough or undressed. Those by or for whom it is bought have what are called *finishing shops*, where the cloth is shorn, dressed, and fitted for the consumer. This is a distinct branch of the business, and it is one in which no female children, and but few boys, are employed; the machinery being, for the most part, attended to, and the work performed, by men.

In some of the Yorkshire factories every part of the work is performed, from the spinning of the yarn to the dressing and finishing of the cloth: in some, again, the yarn is sold; and in some it is given out to hand-weavers, who bring it back as cloth. But we understand that the greater number confine themselves to some one department, of which the dressing and finishing is the most extensive.

For a lengthened period various acts of parliament existed, some of them being applicable only to certain districts, called the *Stamping Acts*. These were intended to obviate frauds in the measurement of cloth; but, at length, their impolicy became obvious to every one, and they were finally repealed in 1818. From 1725 down to that period returns were annually made to the justices at Pontefract sessions, from officers at the different fulling-mills, of the quantity of cloth manufactured in the West Riding. Kerseymeres and various other articles were not, however, included. We subjoin a copy of these returns.

Account of the Number of Broad Cloths milled at the several Fulling-Mills, in the West Riding of the County of York, from the 12th of March, 1726, and thence annually, distinguishing each Year; and of the Narrow Cloths, from the 20th of January, 1738, and thence annually, distinguishing each Year; exhibiting, also, the Number of Yards made each Year, from Easter Sessions, 1768.

Years.	Broads.	Narrows.	Years.	Broad Pieces	Yards.	Narrow Pieces.	Yards.
1726	26,671	—	1769	92,522	2,771,667½	87,762	2,144,019
1727	28,990	—	1770	93,075	2,717,105	85,376	2,255,625
1728	25,223½	—	1771	92,782	2,966,224½	89,920	2,235,625
1729	29,643	—	1772	112,370	3,223,913¼	95,539	2,377,517½
1730	31,579½	—	1773	120,245	3,635,612¼	89,874½	2,306,235
1731	35,563	—	1774	87,201	2,587,364½	88,323	2,133,583
1732	35,548½	—	1775	95,878	2,841,213	96,794	2,441,007
1733	34,620	—	1776	99,733	2,975,389	99,586	2,488,140½
1734	31,123	—	1777	107,750	3,153,891	95,786	2,601,583
1735	31,744½	—	1778	132,506	3,795,990	101,629	2,746,712
1736	38,899	—	1779	110,942	3,427,150	93,143	2,659,649
1737	42,256	—	1780	94,625	2,802,671	87,309	2,571,324
1738	42,401	14,495	1781	102,018	3,099,127	98,721	2,671,397
1739	43,086½	58,848	1782	112,470	4,455,405	96,743	2,598,751
1740	41,441	58,620	1783	131,092	4,568,376	108,641	3,292,002
1741	46,364	61,196	1784	138,023	4,094,335	115,500	3,356,648
1742	44,954	62,804	1785	157,275	4,844,855	116,036	3,409,278
1743	45,178½	63,545	1786	158,792	4,934,975	123,025	3,536,839
1744	54,627½	63,065	1787	155,748	4,850,832	128,740	4,058,157
1745	50,453	63,423	1788	139,406	4,244,322	132,143	4,208,303
1746	56,637	68,775	1789	154,134	4,716,460	145,495	4,409,673
1747	62,480	68,374	1790	172,586	5,151,677	140,407	4,582,122
1748	60,765	68,080	1791	187,569	5,815,079	154,373	4,797,594
1749	60,705½	68,889	1792	214,851	6,760,728	190,468	5,531,698
1750	60,447½	78,115	1793	190,332	6,054,946	150,666	4,783,722
1751	60,964	74,022	1794	190,988	6,067,208	130,403	4,634,258
1752	60,724	72,442	1795	250,993	7,759,907	155,087	5,172,511
1753	55,358	71,618	1796	246,775	7,830,536	151,594	5,245,704
1754	56,070½	72,394	1797	229,292	7,235,038	156,709	5,505,648
1755	57,125	76,295	1798	224,159	7,134,114	148,566	5,180,313
1756	33,590½	79,318	1799	272,755	8,806,688	180,168	6,377,277
1757	55,777½	77,097	1800	285,851	9,263,966	169,262	6,014,420
1758	60,396	66,396	1801	264,082	8,699,242	137,231	4,833,534
1759	51,877½	65,513	1802	265,660	8,686,046	137,016	5,023,784
1760	49,362½	69,573	1803	266,785	8,942,798	139,575	5,023,996
1761	48,914	75,468	1804	298,178	9,987,255	160,010	5,440,179
1762	48,621	72,946	1805	300,237	10,079,256	165,847	6,193,317
1763	48,058¼	72,096	1806	290,269	9,561,178	175,334	6,430,101
1764	54,916	79,458	1807	280,056	9,111,006	162,120	6,150,961
1765	54,660	77,419	1808	279,859	9,050,970	144,624	5,309,007
1766	72,575½	78,893	1809	311,239	9,826,048	151,911	5,951,762
1767	102,428	78,819	1810	273,664	8,671,042	158,252	6,180,811
1768	90,036	74,480	1811	269,892	8,535,559	141,809	5,715,534
			1812	318,431	9,949,419	136,863	5,117,209
			1813	369,890	11,702,837	142,863	5,515,755

This table shows the great increase of the manufacture in the West Riding during the period to which it refers; and the extraordinary increase in the number of factories erected since 1813, and in the imports of foreign wool, show that the manufacture has continued to increase, since the last mentioned epoch, with even more rapidity than before.

The woollen manufacture is carried on to a greater extent in Gloucester than in any other of the western counties. Broad cloths of various sorts are made in it, but chiefly superfine, of Saxon, Australian, and Spanish wool; and fine narrow fancy goods are, also, extensively produced. The manufacture is carried on in the district called the *Bottoms*, including parts of the several parishes of Avening, Painswick, Pitchcomb, Randwick, Minchinhampton, Stroud, Biesly, Rodborough, Stonehouse, King's Stanley, Leonard Stanley, Wood Chester, Horsley, and Eastington. Extensive works are also carried on at Dursley, Cam, Uley, Alderley, Wickwar, and Wooton-under-Edge. Stroud may be considered as the centre of the manufacture in this part of the country; all the surrounding valleys exhibiting ranges of houses or villages occupied by persons engaged in this business; and the banks of the Frome being thickly set with fulling-mills. In 1834 there were, in Gloucestershire, 118 woollen factories, employing 7,973 work-people; being the next greatest district to the West Riding of Yorkshire.

Bradford, in Wiltshire, is the centre of what is, perhaps, the greatest fabric of superfine cloth in England; the district including the surrounding towns of Trowbridge, Westbury, Melksham, and Chippenham. Woollen cloth, of a thin texture, is made at Wilton; and cloths of various qualities, but all fine, are made at Warminster, Heytesbury, and Calne. In 1834 there were in Wilts 63 woollen factories, employing 3,258 work-people.

In Somersetshire the manufacture is carried on at Taunton, where the goods produced are principally of a coarse fabric, and at Frome and Tiverton (near Bath). Shepton Mallet has entirely lost its woollen trade. Taunton is famed for its manufacture of second cloth; Frome for superfine, of which it produces a large supply. West of England cloths are commonly divided into 5 classes, according to their thickness: the thickest are double milled superfine; the finest and thinnest cloths are for the Turkey trade; ladies' cloths are rather thicker than these; cloths manufactured for the East and West Indies a degree thicker; the superfine being, in point of thickness, next to the double-milled superfine already mentioned. The Western woollen manufacture also extends into parts of Dorsetshire; Sturminster Newton, in that county, producing white baize and flannels.

The county of Norfolk was long the principal seat of the stuff or worsted manufacture. The name worsted is said, as previously mentioned, to be derived from Worsted, a parish in this county, where woollen twist and stuffs were first made. But the manufacture was early transferred to Norwich, whence it extended to other towns. A number of refugees, who sought an asylum at Norwich from the persecutions of the Duke of Alva, introduced the manufacture of bombasins, for which this city was afterwards distinguished. It has been, also, celebrated for its manufacture of crapes and camlets; and, more recently, for that of shawls. On the whole, however, the manufactures of Norwich appear to have declined considerably during the present century; and those in the other towns of the county are at present of trifling importance. This falling off is principally, we believe, ascribable to the want of coal, and to the consequent disadvantage under which most businesses are carried on here, as compared with those established in the districts where this mineral abounds: in fact, the greater part of the yarn now made use of in the Norwich fabrics is made at Bradford in Yorkshire; and, as already stated, the worsted manufacture of the West Riding is become of decidedly greater extent and value than that of Norfolk. Worsted yarn is also largely produced in Leicestershire; and to some extent in Warwick and other places.

Exclusive of the leading fabrics already adverted to, an immense variety of woollen goods, the mere recapitulation of the names of which would be a tedious task, are manufactured in various places. Druggets, long-ells, &c., are made in Devonshire and the contiguous parts of Cornwall, and in some parts of Somerset. They are sold, as they come from the loom, to the merchants of Exeter, by whom they are milled, dyed, finished, and afterwards exported. The East India Company were the principal buyers of long-ells; but, as they are but little used at home, and the exports have declined, the manufacture is no longer in a flourishing state. The manufacture of plush, at Modbury in Devonshire, deserves notice; but, notwithstanding the ingenious machinery that was employed, it is much decayed.

Baize was formerly largely produced in the towns and neighbourhood of Colchester, Bocking, Braintree, and Coggleshall, in the county of Essex; but the manufacture has almost entirely passed to other places, especially to Rochdale, in Lancashire. Baize and flannels are also manufactured at Bury, in Lancashire; and the former article, with coarse cloth and blankets, at Chichester, in Sussex. Salisbury is noted for its flannels. Blankets are made at Dewsbury, Witney, Dulverton, &c. But with respect to Witney it may be observed, that, since the introduction of machinery, the chief part of the blankets sold at its markets (though they still retain their former name) are really made in Glamorganshire. Carpets, of every variety of quality and pattern, and of a very great value, are manufactured at Kidderminster, Wilton, Cirencester, Worcester, Axminster, &c. The best of those made at Wilton and Axminster are deemed but little, if at all, inferior to those imported from Turkey and Persia.

Coarse woollens, druggets, &c., are made in considerable quantities at Kendal, Ambleside, and Keswick. Druggets, shalloons, serges, and a variety of worsted articles, at Andover, Basingstoke, and Alton, in Hampshire. Worsted shags at Banbury and Coventry; rugs, at Burford; and fleecy hosiery at Godalming, in Surrey. Light stuff, bunting, crape, &c., are made at Sudbury, Bury St. Edmund's, Needham Market, and Lavenham. Woollen yarn is likewise made at Mottram, in Cheshire, and in various parts of Lancashire, &c.

Leicestershire is the grand seat of the manufacture of woollen and worsted stockings. In 1833 there were estimated to be, in all, 11,200 stocking-frames employed in the county, principally in the borough of Leicester and its vicinity, but partly, also, at Loughborough (celebrated for the manufacture of patent fleecy hosiery), Hinckley, and other places. Of these, fully 10,000 were employed upon wool. The yarn used in the manufacture is partly prepared in the county, and partly brought from a distance.

In 1833, Mr. Felkin, of Nottingham, well known for his attention to statistical inquiries, estimated the number of frames employed in the United Kingdom, in the manufacture of woollen and worsted stockings, at 13,700. Of these, the proportion belonging to England may be taken at about 12,000. Mr. Felkin farther estimated the entire value of the wool and worsted hosiery at 870,000*l.* But in this estimate no allowance is made for the value of the stockings produced by wires; which, though very much fallen off, is still far too considerable to be altogether neglected.—(*Paper on the Hosiery Trade*, by Mr. Felkin.)

Woollen Manufacture of Wales.—This is principally situated in North Wales, in the counties of Montgomery, Merioneth, and Denbigh. Its products consist of webs, flannels, stockings, socks, wigs, and gloves. The webs manufactured in North Wales are distinguished into 2 sorts; *strong*, or *high country cloth;* and *small*, or *low country ditto.* The first kind is made in Merioneth, principally on the domestic system; though, in some parts, there are factories.—(See *post*). Almost every little farmer makes webs, and few cottages are without a loom. In some cases the manufacturing farmers employ wool of their own growth; but it is principally bought from the woolstaplers and skinners. All kinds are used indiscriminately. The qualities of the manufactured article are very various. There is a market for strong cloth at Shrewsbury; but it is customary for the drapers of that town to travel into the country, and buy goods wherever they find them. It is usual, also, for the principal drapers to keep servants, the greater part of the year, among the manufacturers, who get acquainted with them, assist those who are poor with loans to purchase wool, and superintend the making and dressing of the goods. A good deal of the strong cloth is exported to the continents of Europe and America; but a very considerable quantity is retained at home for workmen's jackets, ironing cloths, blankets, &c.

The small cloth is manufactured in Denbighshire, in that tract of country which includes Llangollen and Corwen. The factory system has not yet been applied to this article. The raw material is procured from the neighbourhood of Oswestry, and is sorted into 2 kinds; the finer part being manufactured into a sort of flannel, called Oswestry flannel, while the coarser part is made into small cloth. Most of this is sent abroad. The clothing of the slaves in the West Indies and South America creates a large demand. It is also said to be made into stockings in Germany, and other parts of the Continent.

Flannels form the most important and valuable article of the Welsh manufactures. They are principally made in Montgomeryshire; but not entirely so, for they are also made in various places within a circle of about 20 miles round Welshpool. The manufacture used to be principally conducted upon the domestic system; but there are now many factories in which it is carried on. In Shropshire, too, into which the manufacture has spread itself, machinery is pretty generally employed. A market for flannels is held at Welshpool every alternate week. Formerly the manufacturers used to bring thither their goods; but now a set of middle-men go about the country, and buy all the flannels they can lay their hands on. At this market nothing is sold on credit, every piece being paid for as soon as measured; and a similar system prevails at the other woollen markets throughout the principality. Stockings, socks, wigs, and gloves, are made principally in the town and neighbourhood of Bala.

The goods produced in the west of England and in Norfolk are not sold, like those of the West Riding of Yorkshire, in halls, but at public fairs or markets, or to the agents sent round by the drapers.

The woollen manufacture of the south of England has, speaking generally, fallen very much off within the last 30 years; a circumstance ascribable, no doubt, to the greater advantages enjoyed, through the possession of coal and otherwise, by the northern manufacturers. The manufacture in the western counties has stood its ground better. It is pretty certain, however, that, down to a recent period, it was gradually, though slowly, declining; but latterly it has revived. Within these few years various improvements have been made in different departments; and, besides the extension of those branches of which it had retained possession, it is now recovering some of those which it was supposed were wholly transferred to the north.

Woollen Manufacture of Scotland.—As compared with that of England, the woollen manufacture of Scotland is quite inconsiderable. Formerly it was usual for the occupiers of land to spin, in their own houses, the greater part of their wool, and to send the yarn to a weaver in a contiguous village, to get it woven into a species of coarse cloth, called *plaiding;* but this sort of manufacture could exist only in a rude and backward state of society, and is now entirely abandoned. Factories for the making of fine cloth have since been set on foot in various parts of Aberdeenshire, and in some other counties; but coarse cloth still continues to form the staple article of Scotch manufacture. Some of the woollen spinning-mills and factories, established at Aberdeen and its vicinity, are upon a very large scale. Coarse cloths are pretty largely produced at Galashiels, Jedburgh, &c., but particularly the first, where their quality has been much improved. They used, also, to be produced in considerable quantities at Hawick; but the attention of the manufacturers of the latter is now principally directed to the production of woollen hose, of which they annually furnish about 500,000 pairs, exclusive of blankets and flannels. Tartans are principally produced in the counties of Stirling (especially in the town), Argyle, and Inverness. Bonnets, which were, at one time, almost universally worn by the middle and lower classes, in all parts of Scotland, are now every where, throughout the Lowlands, superseded by hats; and they are, also, rapidly disappearing in the Highlands. At Kilmarnock, which is one of the most flourishing manufacturing towns in Scotland, above 1,000 weavers are employed in the carpet manufacture, which is also carried on at Stirling, and some other places. Kilmarnock is further supposed to furnish an annual supply of about 1,200,000 worsted shawls, besides large numbers of bonnets and foraging caps for the army. Altogether, there were in Scotland, in 1834, 90 woollen factories, employing 3,505 work-people.

Woollen Manufacture of Ireland.—Owing to the unsettled, turbulent state of the country, and the dependence uniformly placed by the great mass of the inhabitants on agricultural pursuits, manufactures, with, perhaps, the single exception of linen, have always been in a depressed state in Ireland. The woollen manufacture is said to have made some considerable progress in the interval between 1640 and 1687; though, considering the convulsed state of the country during that period, and the wars and proscriptions of which it was the theatre, it is difficult to believe that it could be very perceptible; but, such as it was, it alarmed the English manufacturers, who prevailed on parliament to address William III. to take measures for *discouraging the woollen manufacture in Ireland!* and, in consequence, the exportation of Irish wool and woollens to foreign countries was prohibited, and oppressive duties laid on the importation of Irish woollens into England. The gross injustice and impolicy of such measures are too obvious to need being pointed out. We do not, however, believe that they had any considerable practical influence, or that the woollen manufacture of Ireland would have been in a much more advanced state than it really is had the measures referred to never been heard of. The facilities enjoyed by England for the successful prosecution of the manufacture are so very great that it seems quite visionary to suppose that she should, under any circumstances, have any thing to fear from the competition of Ireland.

In 1779 the prohibition of the export of Irish woollens to foreign countries was repealed. The Act of Union also gave fresh facilities to the Irish manufacture, notwithstanding the unreasonable opposition of the British manufacturers, and of a considerable party in parliament. And at length, in 1823, all duties and restrictions on the woollen trade between the two divisions of the empire were put an end to, and the Irish manufacturer placed, in all political respects, on the same footing as the British. This, however, has not hitherto been of much advantage to Ireland. The continued prevalence of agitation has deterred capitalists from making investments in that country; and, though this cause had not existed, the want of abundant and cheap supplies of good coal, and of expert and careful workmen, would have opposed all but insuperable obstacles to the progress of the manufacture. Instead, therefore, of advancing, it has declined. Several of the factories, that were bolstered up by the protecting duties, abolished in 1823, have been since abandoned. At present, the only broad-cloth factories in Ireland are in the vicinity of Dublin, and at Glenmire, near Cork; but these, with the factories in every other part of the country, do not employ more than from 1,500 to 1,600 hands. Flannels are made in Wicklow, though to no great extent; and the blanket manufacture exists, on a small scale, in Kilkenny.

Modes in which the Woollen Manufacture is carried on. — The woollen manufacture of the West Riding of Yorkshire, and of Gloucester, Wilts, Somerset, and North Wales, is carried on in 3 different modes: 1st, on the system of the master clothier of the West of England; 2d, on the factory system; and, 3d, on the domestic system. We shall briefly notice the peculiar features of each.

1. Through the whole of the west, as well as in the north, of England there are factories; but the practice is for the master clothier of the west of England to buy his wool, if it be foreign, from the importer, mostly assorted, but partly in the fleece, or from the woolstapler, if it be of domestic growth; employing, in all the different processes through which it passes in the course of its manufacture, distinct classes of persons, who sometimes work at their own houses, and sometimes in the factories of their masters. Each workman confines himself exclusively to a peculiar branch of the manufacture; and the

greater skill and dexterity resulting from this more perfect division of employments was believed, by the committee of 1806, to be the principal cause of the acknowledged excellence of the west of England cloths. The committee state that, previously to the introduction of machinery, it was common (and the practice is not yet entirely relinquished) for the north-countryman to come into the west of England to purchase wool; and, having worked it up in Yorkshire, to carry it back in a manufactured state, and sell it in its native county. This is supposed to proceed from the system followed in the north, giving the clothier more liberty to work himself, and employ his family and others, in any way that his interest or fancy suggested: but the practice is now nearly fallen into disuse.

2. In the factory system, the master manufacturers, who sometimes possess a large amount of capital, employ a greater or smaller number of workmen, in one or more buildings or factories, under their own inspection, or that of their superintendents. This system admits, of course, like that of the master clothier of the west of England, of much variation; but in neither has the workman any property in the goods he is employed to produce: and this, as the committee justly state, forms the essential distinction between them and the domestic system.

3. The latter was the original system; and was, indeed, the only one heard of till the accumulation of capital, and the introduction of improved and expensive machinery, paved the way for the others. It is now principally confined to the vicinity of Leeds, Huddersfield, and North Wales; at least they are the only places where it is at present carried on to such an extent as to deserve any particular notice. Under this system, the manufacture is conducted by a number of small masters, generally possessed of but very limited capital, who, besides their business as manufacturers, mostly occupy farms of a few acres, partly for the support of their families, and partly for the convenience of their manufacture. The domestic clothiers have, in these houses, sometimes only 1 loom, sometimes 2 or 3, and but seldom as many as 4: at these they employ themselves, their wives and children, and from 2 or 3 to 6 or 7 journeymen. During harvest, their wives, children, and servants are sent out to work. Formerly the domestic manufacturers used to carry the wool through all the stages of its manufacture, till it was brought to the state of undressed cloth; but for several years past they have availed themselves, in the performance of various processes, of the *public mills* established in or near all the manufacturing villages in the district which is the seat of the domestic system. These mills have been, in various instances, erected on a joint-stock principle, by shares of 50*l.* or 100*l.* each, principally subscribed by the domestic clothiers, to whom they have been of the greatest service. They have, in fact, enabled them to maintain a successful competition with the large manufacturers in the production of inferior cloth; that is, of cloth worth 8*s.* a yard and under. A good many of the smaller manufacturers have also become partners in factories.

The extension of the factory system, consequent on the improvements that were made in machinery subsequently to 1790, excited the fears and jealousy of the domestic clothiers, and even led to outrages.

At last, in order effectually to arrest the progress of what they naturally enough considered a very serious evil, they petitioned parliament to enforce the statute 5 & 6 Edward VI., which, they contended, applied to gig-mills, and the statute 2 & 3 Philip and Mary, limiting the number of looms in one building. These petitions were referred to a committee; and in their report, to which we have already referred, the most satisfactory reasons are assigned, not only for refusing to accede to the request of the domestic clothiers, but for recommending the repeal of both statutes.

We extract from the report the following statements, which set some of the peculiar advantages belonging to both the domestic and factory systems in a very clear point of view, at the same time that they explain the grounds on which the committee concluded that the fears entertained by the domestic clothiers, of being swallowed up by the factory system, were, in a great degree, visionary and ill-founded.

"Your committee cannot wonder that the domestic clothiers of Yorkshire are warmly attached to their accustomed mode of carrying on the manufacture: it is not merely that they are accustomed to it—it obviously possesses many eminent advantages seldom found in a great manufacture.

"It is one peculiar recommendation of the domestic system of manufacture, that, as it has been expressly stated to your committee, a young man of good character can always obtain credit for as much wool as will enable him to set up as a little master manufacturer; and the public mills which are now established in all parts of the clothing district, and which work for hire at an easy rate, enable him to command the use of very expensive and complicated machines, the construction and necessary repairs of which would require a considerable capital. Thus, instances not unfrequently occur, wherein men rise from low beginnings, if not to excessive wealth, yet to a situation of comfort and independence. It is another advantage of the domestic system of manufacture, and an advantage which is obviously not confined to the individuals who are engaged in it, but which, as well as other parts of this system, extends its benefits to the landholder, that any sudden stoppage of a foreign market, any failure of a great house, or any other of those adverse shocks to which our foreign trade, especially, is liable in its present extended state, has not the effect of throwing a great number of workmen out of employ, as, in the domestic system, the loss is spread over a large superficies: it affects the whole body of manufacturers; and, though each little master be a sufferer, yet few, if any, feel the blow so severely as to be altogether ruined. Moreover, it appears in evidence that, in such cases as these, they seldom turn off any of their standing set of journeymen, but keep them at work, in hopes of better times.

"On the whole, your committee feel no little satisfaction in bearing their testimony to the merits of the domestic system of manufacture; to the facilities it affords to men of steadiness and industry to establish themselves as little master manufacturers, and maintain their families in comfort by their own industry and frugality; and to the encouragement which it thus holds out to domestic habits and virtues. Neither can they omit to notice its favourable tendencies on the health and morals of a large and important class of the community.

"But, while your committee thus freely recognise the merits and value of the domestic system, they at the same time feel it their duty to declare it as their decided opinion, that the apprehensions entertained of its being rooted out by the factory system, are, at present at least, wholly without foundation.

"For, happily, the merchant, no less than the domestic manufacturer, finds his interest and convenience promoted by the domestic system. While it continues, he is able to carry on his trade with far less capital than if he were to be the manufacturer of his own cloth. Large sums must, then, be irrecoverably invested in extensive buildings and costly machinery; and, which, perhaps, is a consideration of even still more force, he must submit to the constant trouble and solicitude of watching over a numerous body of workmen. He might then often incur the expense of manufacturing articles which, from some disappointment in the market, must either be kept on hand, or be sold to a loss. As it is, he can agree with his customer at home or abroad for any quantity of goods; and, whether on a long expected or a sudden demand, he can repair at once to the market, and, most probably, purchase to the precise extent of his known wants; or, if the market happen not to furnish what he wishes to purchase, he can give out his sample, and have his order executed immediately. While these, and various other considerations which might be stated, interest the merchant, as well as the manufacturer, in the continuance of the domestic system, and when it is remembered that this mode of conducting the trade greatly multiplies the merchants, by enabling men to carry on business with a comparatively small capital, your committee cannot participate in the apprehensions which are entertained by the domestic clothiers. In fact, there are many merchants, of very large capitals, and of the highest credit, who, for several generations, have gone on purchasing in the halls; and some of this very description of persons state to your committee, that they not only had no thoughts of setting up factories themselves, but that they believed many of those who had established them were not greatly attached to that system, but only persisted in it because their buildings and machinery must otherwise lie a dead weight upon their hands. Under these circumstances, the lively fears of the decline of the domestic, and the general establishment of the factory, system, may, reasonably excite surprise. It may have been in part occasioned by the decrease of the master manufacturers in the immediate neighbourhood of the large towns, especially in two or three populous hamlets adjoining to Leeds, whence they have migrated to a greater distance in the country, where they might enjoy a little land, and other conveniences and comforts. It may have strengthened the impression that, as your committee have already stated, three or four factories have, within no very long period of time, been established in Leeds or its vicinity.

"The right of every man to employ the capital he inherits or has acquired according to his own discretion, without molestation or obstruction, so long as he does not infringe on the rights or property of others, is one of those privileges which the free and happy constitution of this country has long accustomed every Briton to consider as his birthright; and it cannot, therefore, be necessary for your committee to enlarge on its value, or to illustrate its effects. These would be indubitably confirmed by an appeal to our own commercial prosperity, no less than by the history of other trading nations, in which it has been ever found that commerce and manufactures have flourished in free, and declined in despotic, countries. But, without recurring to principles of which, even under different circumstances, your committee would be compelled to admit the force, your committee have the satisfaction of seeing that the apprehensions entertained of factories are not only vicious in principle, but that they are practically erroneous to such a degree, that even the very opposite dispositions might be reasonably entertained; nor would it be difficult to prove that the factories, to a certain extent, at least, and in the present day, seem absolutely necessary to the well-being of the domestic system; supplying those very particulars wherein the domestic system must be acknowledged to be inherently defective: for it is obvious that the little master manufacturers cannot afford, like the man who possesses considerable capital, to try the experiments which are requisite, and incur the risks, and even losses, which almost always occur, in inventing and perfecting new articles of manufacture, or in carrying to a state of greater perfection articles already established. He cannot learn by personal inspection the wants and habits, the arts, manufactures, and improvements, of foreign countries: diligence, economy, and prudence are the requisites of his character, not invention, taste, and enterprise; nor would he be warranted in hazarding the loss of any part of his small capital. He walks in a sure road as long as he treads in the beaten track; but he must not deviate into the paths of speculation. The owner of a factory, on the contrary, being commonly possessed of a large capital, and having all his workmen employed under his own immediate superintendence, may make experiments, hazard speculation, invent shorter or better modes of performing old processes, may introduce new articles, and improve and perfect old ones; thus giving the range to his taste and fancy, and thereby alone enabling our manufacturers to stand the competition with their commercial rivals in other countries. Meanwhile, as is well worthy of remark (and experience abundantly warrants the assertion), many of these new fabrics and inventions, when their success is once established, become general among the whole body of manufacturers; the domestic manufacturers themselves thus benefiting, in the end, from those very factories which had been, at first, the objects of their jealousy. The history of almost all our other manufactures, in which great improvements have been made of late years, in some cases at an immense expense, and after numbers of unsuccessful experiments, strikingly illustrates and enforces the above remarks. It is, besides, an acknowledged fact, that the owners of factories are often among the most extensive purchasers at the halls, where they buy from the domestic clothier the established articles of manufacture, or are able at once to answer a great and sudden order; while at home, and under their own superintendence, they make their fancy goods, and any articles of a newer, more costly, or more delicate quality, to which they are enabled, by the domestic system, to apply a much larger proportion of their capital. Thus the two systems, instead of rivalling, are mutual aids to each other; each supplying the other's defects, and promoting the other's prosperity."

Experience has proved the correctness of these conclusions. The number of small manufacturers, and the quantity of cloth produced by them, have both increased since 1806; but, as the number of factories, and the quantity of cloth made in them, have increased still more rapidly, the former constitute, at present, a less proportion of the trade.

Comparative moral Influence of the Factory and Domestic Systems. —The committee have made no remarks on this head; and it comes, indeed, more within the sphere of the politician and moralist than of the statistician. Though the question be not free from difficulty, we are, on the whole, disposed to agree with those who think that the domestic system is, in a moral point of view, decidedly superior to the other. In it the manufacturer works at home, surrounded by his family, on goods which are his own property. In this case, therefore, the young are not corrupted by the contaminating influence of the unworthy companions they may meet with at factories; and, being under their father's eye, they are restrained from indulging in vicious habits; while the industry of the family is stimulated by the consciousness that they are working for themselves, and that they will reap all the advantage of superior perseverance and skill. It is really, however, quite unfair to contrast the condition of those employed in factories with that of the small country clothiers. Factories are, for the most part, established in considerable towns: and the individuals engaged in them are not often taken from the class of small manufacturers, but from a very inferior class, who have few or none of the advantages enjoyed by the clothiers. To such persons, and particularly to their children, well-conducted factories are really schools of improvement; and both their morals and their health are improved by being in them. Those familiar with the cold and comfortless habitations of the poor in many of the large towns, and the little attention paid to the children, will have no difficulty in assenting to what is now stated. Provided the children be not sent too early to factories, nor wrought too hard, they acquire habits of industry, and of regular, orderly conduct, that are of the highest importance; and the influence of which is materially assisted by the education they receive at the Sunday schools.

Health of the People employed in Woollen Factories. — There is, as might be expected, a great deal of conflicting and contradictory assertion on this point, and but little evidence that can be entirely depended upon. It is evident, indeed, that much of the influence of a factory depends on its construction, the branches carried on in it, and the way in which it is managed; so that what may be true of some may be quite false if affirmed of others. On the whole, however, we are inclined to think that, speaking generally, woollen factories may be said to be decidedly healthy. Children are now rarely admitted into them under 9 years of age: the proportion of females, at least in the English factories, is less than in most other manufactures: the hours of working have, also, been materially reduced, and greater attention paid to ventilation, cleanliness, and comfort, within the last dozen years. The late Mr. Thackrah, an intelligent surgeon of Leeds, states that slubbers and spinners are "strong, robust, and healthy." * Some of the other departments are, no doubt, less favourable; but, taking the whole manufacture together, there is certainly nothing in it, provided the hours of labour be not excessive, to occasion any injury to health.

The statements as to the mortality in Leeds, given in the Table in the *Appendix to the Report of the Committee of the House of Commons on the Employment of Children in Factories*, have been shown to be totally without foundation. It appears, from the authentic returns given by Mr. Thorpe, that the mortality at Leeds has materially decreased since 1801, notwithstanding there were hardly any factories at that period. The population of the township, in 1801, was 30,669; and as the burials, at an average of the 3 preceding years, were 941 annually, the rate of mortality must have been about 1 in 32·5: but in 1831 the population had increased to 71,602; while the burials, at an average of the 3 preceding years, were 1,718 annually, showing that the rate of mortality had been reduced to 1 in 41·5. This, however, owing to the increase of population, is not really so great an improvement as it would seem: but of there having been a material improvement there can be no doubt; and it appears, comparing, at each period, the numbers of those who died under, and those who died at and above, 40 years of age with the population, that the improvement has been pretty equally distributed over the whole period of life, though rather in a greater degree above 40 than below that age.—(See Mr. Drinkwater's *Report on Yorkshire*, in the papers published by the Factory Commissioners, C. 1. p. 161., and the authorities referred to.)

Males and Females employed.—Wages.—The following tables, exhibiting the respective numbers of males and females, classed according to their ages, with the wages payable to each, in various woollen factories in different parts of the kingdom, have been deduced from the returns made by the Factory Commissioners. They exhibit some very striking discrepancies, for which it is very difficult to account. In Leeds and the adjoining district the males in factories are to females nearly in the proportion of 30 to 21; in Somerset they are as 49 to 38; in Gloucester as 122 to 76; and in Wilts as 187 to 82. In Aberdeenshire we have a totally different result, the males being there to the females only in the proportion of 30 to 60! We are well assured that this extraordinary difference has very little indeed to do with the supposed greater strength of the Scotch females; and that it depends principally on the difference of the work, and the comparatively small demand for female labour in other departments in Aberdeenshire.

The wages of adults seem to be much higher in Leeds and the

* *On the Effect of Trades, Professions, &c. on Health and Longevity*, 2d ed. p. 33.

adjoining district than any where else. Dr. Mitchell, in his report to the commissioners, thinks that this may be owing, at least as compared with other places in England, to the comparatively small amount of poor-rates in Leeds; and it is reasonable to suppose that this must have a considerable influence. But the rate of wages is liable to be affected by so many circumstances,—depending, partly on the nature of the work, partly on the good or defective state of the machinery employed, partly on the prosperous or backward state of the manufacture, partly on the cost of provisions, lodgings, &c.,—that it is impossible to conclude, from the subjoined tables, how much it really differs, supposing the circumstances to be the same, in the undermentioned places.

TABLES exhibiting, separately, the Numbers of Males and Females, classed according to their Ages, with the Wages paid to each, in certain Factories in the West Riding of Yorkshire, Gloucestershire, Somersetshire, Wiltshire, and Aberdeenshire, according to the Returns of the Factory Commissioners.

West Riding of Yorkshire.

Age.	Males. Number employed.	Males. Average Weekly Wages. L. s. d.	Females. Number employed.	Females. Average Weekly Wages. L. s. d.
Below 11	214	0 2 0	197	0 2 5
From 11 to 16	700	0 4 4½	724	0 4 6½
— 16 — 21	475	0 9 9	559	0 6 5½
— 21 — 26	302	0 19 6½	285	0 7 0
— 26 — 31	241	1 2 5½	174	0 7 4½
— 31 — 36	251	1 2 6	85	0 7 2½
— 36 — 41	165	1 2 6½	85	0 7 7
— 41 — 46	158	1 2 0	52	0 6 10½
— 46 — 51	118	1 2 0½	28	0 7 1½
— 51 — 56	76	1 1 0½	9	0 7 5½
— 56 — 61	44	1 1 11	11	0 6 3½
— 61 — 66	32	1 0 3	3	0 3 5½
— 66 — 71	14	0 16 8½		
— 71 — 76	5	0 15 3		
— 76 — 81	- -	- -	1	0 7 0
— 81 — 86				
	2,995		2,113	

Gloucestershire.

Age.	Males. Number employed.	Males. Average Weekly Wages. L. s. d.	Females. Number employed.	Females. Average Weekly Wages. L. s. d.
Below 11	134	0 1 8½	75	0 1 7
From 11 to 16	333	0 3 1½	153	0 2 7½
— 16 — 21	182	0 6 9½	166	0 4 6½
— 21 — 26	116	0 11 5½	79	0 5 6
— 26 — 31	111	0 12 11½	79	0 5 6½
— 31 — 36	83	0 15 3½	54	0 5 8
— 36 — 41	70	0 14 4½	50	0 5 5½
— 41 — 46	69	0 13 8	38	0 5 7
— 46 — 51	58	0 13 2	37	0 5 6½
— 51 — 56	35	0 11 4	13	0 4 4½
— 56 — 61	22	0 16 0	13	0 5 0
— 61 — 66	13	0 13 8	8	0 5 0½
— 66 — 71	7	0 10 11		
— 71 — 76	2	0 11 3	1	0 1 6
— 76 — 81	4	0 8 4	1	0 7 0
	1,229		767	

Somersetshire.

Age.	Males. Number employed.	Males. Average Weekly Wages. L. s. d.	Females. Number employed.	Females. Average Weekly Wages. L. s. d.
Below 11	56	0 2 1½	18	0 2 0
From 11 to 16	132	0 3 5½	62	0 2 10½
— 16 — 21	80	0 7 10	91	0 5 1½
— 21 — 26	62	0 14 10½	67	0 6 6
— 26 — 31	53	0 16 3½	35	0 7 5½
— 31 — 36	54	0 17 10½	25	0 8 1
— 36 — 41	42	0 19 9½	28	0 6 9
— 41 — 46	41	0 16 10½	21	0 7 4½
— 46 — 51	36	0 18 0½	16	0 6 11½
— 51 — 56	17	0 14 4½	7	0 7 11
— 56 — 61	11	0 16 3½	5	0 5 3
— 61 — 66	6	0 12 2	3	0 3 3½
— 66 — 71	5	0 12 0	2	0 5 0
— 71 — 76	1	0 11 8	1	0 2 0
— 76 — 81				
	496		381	

Wiltshire.

Age.	Males. Number employed.	Males. Average Weekly Wages. L. s. d.	Females. Number employed.	Females. Average Weekly Wages. L. s. d.
Below 11	115	0 1 9	35	0 2 3
From 11 to 16	569	0 2 10½	135	0 2 9½
— 16 — 21	309	0 6 4½	136	0 4 9
— 21 — 26	142	0 11 6½	95	0 6 0½
— 26 — 31	161	0 13 10½	86	0 5 1½
— 31 — 36	136	0 13 5	87	0 6 11½
— 36 — 41	123	0 13 7½	93	0 6 2
— 41 — 46	102	0 14 8½	44	0 6 0½
— 46 — 51	73	0 14 10	54	0 5 9
— 51 — 56	61	0 14 10½	28	0 5 8½
— 56 — 61	56	0 12 2	20	0 5 6
— 61 — 66	30	0 11 2	8	0 5 3½
— 66 — 71	8	0 7 5½	4	0 5 1½
— 71 — 76	6	0 6 6	1	0 4 0
— 76 — 81				
— 81 — 86				
	1,871		826	

Aberdeen.

Age.	Males. Number employed.	Males. Average Weekly Wages. L. s. d.	Females. Number employed.	Females. Average Weekly Wages. L. s. d.
Below 11	6	0 2 6	11	0 3 4½
From 11 to 16	68	0 4 11	195	0 3 7
— 16 — 21	27	0 7 9½	183	0 5 1½
— 21 — 26	32	0 14 5	96	0 5 7½
— 26 — 31	31	0 14 10	61	0 5 5
— 31 — 36	24	0 16 6½	19	0 5 4½
— 36 — 41	33	0 14 10½	14	0 5 6½
— 41 — 46	19	0 13 9½	3	0 5 0
From 46 to 51	21	0 15 1½	10	0 5 3
— 51 — 56	13	0 15 2½	8	0 4 11½
— 56 — 61	18	0 12 4½	5	0 4 4½
— 61 — 66	4	0 14 0		
— 66 — 71	5	0 10 1½	1	0 4 6
— 71 — 76	3	0 11 4	2	0 3 3
— 76 — 81	1	0 12 0		
	305		60	

SECT. III. *Cotton Manufacture.*

The precise period when the cotton manufacture was introduced into England is not known; but it is most probable that it was some time in the early part of the 17th century. The first authentic mention is made of it by Lewis Roberts, in his *Treasure of Traffic*, published in 1641, where it is stated, "The town of Manchester, in Lancashire, must be also herein remembered, and worthily, for their encouragement, commended, who buy the yarne of the Irish in great quantity, and, weaving it, return the same again into Ireland to sell. Neither doth their industy rest here; for they buy cotton-wool in London, that comes first from Cyprus and Smyrna, and at home worke the same, and perfect it into fustians, vermilions, dimities, and other such stuffes, and then return it to London, where the same is vented and sold, and not seldom sent into forrain parts, who have meanes, at far easier terms, to provide themselves of the said first materials." — (Orig. ed. p. 32.) It is true, indeed, that mention is frequently made by previous writers, and in acts of the legislature, passed at a much earlier period *, of "Manchester cottons," "cotton velvets," "fustians," &c.; but it is certain that these articles were *wholly composed of wool*, and had, most probably, been denominated cotton from their having been prepared in imitation of some of the cotton fabrics imported from India and Italy.

From the first introduction of the cotton manufacture into Great Britain, down to the comparatively late period of 1773, the weft, or transverse threads of the web, only were of cotton; the warp, or longitudinal threads, consisting wholly of linen yarn, principally imported from Germany and Ireland. In the first stage of the manufacture, the weavers, dispersed in cottages throughout the country, furnished themselves, as well as they could, with the warp and weft for their webs, and carried them to market when they were finished; but about 1760 a new system was introduced. The Manchester merchants began, about that time, to send agents into the country, who employed weavers, whom they supplied with foreign or Irish linen yarn for warp, and with raw cotton; which, being carded and spun, by means of a common spindle or distaff, in the weaver's own family, was then used for weft. A system of domestic manufacture was thus established: the junior branches of the family being employed in the carding and spinning of the cotton, while its head was employed in weaving, or in converting the linen and cotton yarn into cloth. This system, by relieving the weaver from the necessity of providing himself with linen yarn for warp, and raw cotton for weft, and of seeking customers for his cloth when finished, and enabling him to prosecute his employment with greater regularity, was an obvious improvement on the system that had been previously followed; but it is at the same time clear, that the impossibility of making any considerable division among the different branches of a manufacture so conducted, or of prosecuting them on a large scale, added to the interruption given to the proper business of the weavers, by the necessity of attending to the cultivation of the patches of ground which they generally occupied, opposed invincible obstacles to its progress, so long as it was conducted in this mode.

The custom-house returns of the imports of raw cotton, and of the export of cotton goods, during the first half of last century, are very imperfect. The following account, furnished by authority to Mr. Baines, contains all the information that can be rendered by the customs' officers on this subject.

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* In an act of 5 & 6 Edw. VI. (1552), entitled, "For the true making of *woollen* cloth," it is ordered, "*That all cottons called Manchester, Lancashire, and Cheshire cottons*, full wrought for sale, shall be in length," &c. This proves, incontestably, that what were then called cottons were made wholly of wool.

Years.	Raw Cotton imported.	Official Value of British Cotton Goods exported	Years.	Raw Cotton imported.	Official Value of British Cotton Goods exported
	lbs.	£		*lbs.*	£
1697	1,976,359	5,915	1730	1,545,472	13,524
1701	1,985,868	23,253	1741	1,645,031	20,709
1710	715,008	5,698	1751	2,976,610	45,986
1720	1,972,805	16,200	1764	3,870,392	200,354

The following more detailed account of the import and export of cotton wool, during the 7 years ending with 1749, is taken from a paper laid before a committee of the House of Commons, on the linen manufacture, and printed in *Postlethwayte's Commercial Dictionary*, art. LINEN.

Years.	Cotton imported.	Cotton exported.	Cotton retained for Home Use.
	lbs.	*lbs.*	*lbs.*
1743	1,132,288	40,870	1,091,418
1744	1,882,873	182,765	1,700,108
1745	1,469,523	73,172	1,369,351
1746	2,264,868	73,279	2,191,529
1747	2,224,869	29,438	2,195,431
1748	4,855,966	291,717	4,561,249
1749	1,658,365	330,998	1,327,357

Postlethwayte's Dictionary was published in 1766; and the author estimated the then value of the different species of cotton goods produced in England at about 600,000*l.* a-year. This, however, includes, in addition to the cotton, the value of the linen yarn used in the manufacture; and, when a reasonable deduction is made on account of the latter, the inconsiderable amount of the cotton trade, even at this late period, is sufficiently obvious.

Such was the depressed state of this manufacture at the commencement of that wonderful career of invention and discovery which has carried it to its present unexampled pitch of greatness and prosperity. The first, and perhaps, also, the most important, step in this career was made by James Hargraves, an illiterate but most ingenious mechanic, who invented the *spinning-jenny*, in 1767. At first, this admirable machine enabled *eight* threads to be spun with the same facility as one; and it was subsequently brought to such perfection, that a little girl was able to work no fewer than from *eighty* to *one hundred and twenty* spindles!

The jenny was applicable only to the spinning of cotton for weft, being unable to give to the yarn that degree of firmness that is required in the longitudinal threads or warp; but this deficiency was soon after supplied by the introduction of the *spinning frame*, that wonderful piece of machinery, which spins a vast number of threads of the strength and hardness suitable for warps, leaving to man merely to feed the machine with cotton, and to join the threads when they happen to break. It is not difficult to understand the principle on which this machine is constructed, and the mode of its formation. "In every mode of spinning, the ends to be accomplished are, to draw out the loose fibres of cotton wool in a regular and continuous line; and, after reducing the fleecy roll to the requisite tenuity, to twist it into a thread. Previous to the operation of spinning, the cotton must have undergone the process of carding, the effect of which is to comb out, straighten, and lay parallel to each other, its entangled fibres. The cotton was formerly stripped of the cards in loose rolls, called cardings, or *slivers;* and the only difference between the slivers produced by the old hand-cards, and those produced by the present carding-engine, is, that the former were in lengths of a few inches, and the latter are of the length of some hundred yards. Let it be remarked, that the sliver, or carding, requires to be drawn out to a considerably greater fineness before it is of the proper thickness to be twisted into a thread. The way in which this is now accomplished is by two more pairs of small rollers, placed horizontally, the upper and lower roller of each pair revolving in contact. The sliver of cotton, being put between the first pair of rollers, is, by their revolution, drawn through and compressed, whilst, still passing through these rollers, it is caught by another pair of rollers, placed immediately in front, which revolve with three, four, or five times the velocity of the first pair, and which, therefore, draw out the sliver to three, four, or five times its former length and degree of fineness. After passing through the second pair of rollers, the reduced sliver is attached to a spindle and fly, the rapid revolutions of which twist it into a thread, and, at the same time, wind it upon a bobbin. That the rollers may take hold of the cotton, the lower roller is fluted longitudinally, and the upper is covered with leather.

"Such is the beautiful and admirable contrivance by which a machine is made to do what was formerly, in all countries and ages, effected by the fingers of the spinner. It is obvious that, by lengthening or multiplying the rollers, and increasing the number of spindles, all of which may be turned by the same power, many threads may be spun at once, and the process may be carried on with much greater quickness and steadiness than hand-spinning. There is, also, the important advantage, that the thread produced will be of more regular thickness, and more evenly twisted."—(*Baines's History of the Cotton Manufacture*, p. 120.)

The invention of this wonderful piece of mechanism has been usually ascribed to Sir Richard Arkwright, who took out a patent for *spinning by rollers* in 1769. But Mr. Baines has shown that the merit of being the original discoverer of this great invention is incontestably due to a Mr. John Wyatt, who took out, in the name of Mr. Lewis Paul, a foreigner, a patent, wherein the process of spinning by rollers is distinctly described, so early as 1738, or 31 years before Arkwright's patent. And it further appears that, in 1741 or 1742, Wyatt erected a mill at Birmingham, which was turned by two asses, and attended by 10 girls. Some of the yarn spun by this mill is still in existence. Owing, however, to the imperfectness of the machinery, the want of skill, capital, or some other cause, this undertaking was speedily abandoned. The invention was soon after tried, on a larger scale, at Northampton, but with no better success.* It appears, from the special reference made to them in the case printed by Sir Richard Arkwright in 1786, that he was fully aware of these attempts to spin by machinery; but it is not known whether he was aware of the principle on which they proceeded, or had seen the patent referred to. Undoubtedly, however, the presumption seems to be that he had seen it; and, if so, he cannot be regarded as the inventor of the spinning frame. But, notwithstanding this deduction from his extraordinary merits, enough will still remain to justify the claims of Arkwright to the respect and gratitude of mankind. The machine he constructed, though in principal the same, differed materially in its form and make from that of Wyatt. In the hands of the latter, the invention, how ingenious soever, was of no practical utility; and all traces of it seem to have been lost. If Arkwright did not invent it a second time, he did what was equally important, he made it available in practice, and showed how it might be rendered the most prolific source of individual and public wealth.

Sir Richard Arkwright's patent was set aside in 1785; and, since then, the progress made in every department of the manufacture has been most rapid. The improvements made on the steam-engine by the genius of Watt relieved the spinners from the necessity, under which they would, of course, have been placed, of building factories in inconvenient situations, merely for the sake of waterfalls; and enabled them to raise them in the centre of an industrious population, where all the processes necessary in the manufacture might be brought together, and carried on, as it were, almost in the same workshop. The *mule jenny*, so called from its being a compound of the jenny and the spinning-frame, was invented by Mr. Samuel Crompton, of Bolton, in 1775; but it did not come into general use till after the dissolution of Arkwright's patent. The yarn produced by the spinning-frame, though well fitted for warp, was of too firm and hard a texture to render it available for weft, which was, in consequence, mostly spun upon Hargraves' jenny. But the introduction of the mule almost entirely superseded the latter, and forms an important era in the history of the cotton manufacture. All sorts of wefts, from the lowest to the highest numbers, are now spun by means of this machine; and, as a specimen of the perfection to which spinning by it was speedily carried, we may mention that Mr. John Pollard, of Manchester, spun, in 1792, on the mule, no fewer than 278 hanks of yarn, forming a thread of 233,520 yards, or upwards of 132 miles, in length, from a single pound of raw cotton; and, since then, as many as 350 hanks, forming a continuous thread of 167 miles in length, have been obtained from a pound of cotton.

Mr. Crompton did not take out any patent for his invention, which, indeed, he only perfected by slow degrees. In 1812 he was advised to apply to parliament for a reward. His claim being entertained, a committee of the House of Commons was appointed to investigate the matter, before which evidence was brought to prove that upwards of *four millions* of spindles were employed on Mr. Crompton's principle; that two thirds of the steam-engines for spinning cotton turned mules;

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* Letter by Mr. Charles Wyatt, son of the inventor, in *Baines's Cotton Manufacture*, p. 134.

and that the value of the buildings, machinery, &c., employed on the same principle, amounted to from 3,000,000*l.* to 4,000,000*l.* It is painful to have to add that, notwithstanding this conclusive evidence as to the great utility and importance of his invention, the House of Commons voted Mr. Crompton the paltry sum of 5,000*l.*; a pittance hardly adequate to defray the expenses of the application!

At first the mule carried only 144 spindles; but, by successive improvements, it was rendered capable, about a dozen years ago, of working 300 or 400 spindles. Its maximum capability was far, however, from being yet attained; and several mules are now at work in Manchester, and other places, carrying the extraordinary number of from 700 to 800 spindles, and a few as many as 1,100 spindles.

Various attempts have been made, at different periods, by Mr. Kelly and others, to work the mule solely by machinery, without the aid of manual labour. But none of the contrivances for that purpose were altogether successful till the *self-acting mule* of Messrs. Sharpe and Roberts, of Manchester, came recently into the field. The machinery is so constructed as to roll the spindle-carriage out and in at the proper speed, without a hand touching it; the only manual labour employed in these machines being that of the children who join the broken threads. The machine seems to have come very near perfection; producing a considerably greater quantity of yarn, of a more uniform twist, and less liable to break, than mules wrought by the hand; at the same time that it has the important advantage of rendering the mill-owners independent of the combinations and strikes of the working spinners. Mr. Baines mentions, that the patentees informed him, in March, 1834, that they had then made 520 self-acting mules, containing upwards of 280,000 spindles, and that that number was likely to be more than doubled in the course of the year. — (*History of Cotton Manufacture*, p. 207.)

Besides these leading inventions, there have been many of inferior, indeed, but still of very great importance. In consequence of the combined influence of the whole, and of the gradually increasing skill and dexterity of the workman, the art of spinning has been carried to a degree of perfection that, in 1760, could not have been believed attainable even by the most sanguine and visionary of projectors.

But, to complete the manufacture, it was necessary to improve and perfect the art of weaving as well as of spinning; and this, also, has been done. The *power-loom*, invented by the Rev. Dr. Cartwright, a clergyman of Kent, has done for weaving what the invention of Arkwright did for spinning. Dr. Cartwright states, in a very interesting letter addressed to Mr. Bannatyne, of Glasgow, that the idea of constructing a power-loom was excited in his mind by being in company with some Manchester gentlemen at Matlock, in 1784, who remarked that so many cotton-mills would be erected, and so much yarn spun, that it would be impossible to procure hands to weave it. Dr. Cartwright replied that, in that case, Mr. Arkwright must set his wits to work to invent a weaving-mill. The Manchester gentlemen all declared that that was impracticable; but Dr. Cartwright denied that there could be any greater difficulty in inventing a machine to weave cotton than to spin it; and, meditating afterwards on the subject of this conversation, he succeeded in constructing a loom, all the movements of which were performed by means of machinery! Dr. Cartwright took out a patent for his invention in 1787; and, subsequently, received 10,000*l.* as a reward from government.

The progress of power-loom weaving was not, at first, so rapid as might have been expected: this arose partly from the imperfections that attached originally to the machine, but chiefly from the circumstance of its being necessary to dress the webs, from time to time, after they were put into the looms, which made it impossible for one person to do more than attend to one loom. But a beautiful machine, invented by Mr. Thomas Johnson, of Bradbury, for warping and dressing the yarn used as warps, has completely obviated this difficulty; and, at this moment, a boy or girl, of from 12 to 14 years of age, can with ease attend to two power-looms, and can, by their means, produce three and a half or four times as much cloth as could be produced by the best hand-loom weaver.

"The best hand-weavers seldom produce a piece of uniform evenness; indeed, it is next to impossible for them to do so, because a weaker or stronger blow with the lathe immediately alters the thickness of the cloth; and, after an interruption of some hours, the most experienced weaver finds it difficult to recommence with a blow of precisely the same force as the one with which he left off. In power-looms the lathe gives a steady certain blow; and, when once regulated by the engineer, moves with the greatest precision from the beginning to the end of the piece. Cloth made by these looms, when seen by the manufacturers who employ hand-weavers, at once excites admiration, and a consciousness that their own workmen cannot equal it."—(*Baines's Cotton Manufacture*, p. 240.)

Arkwright's spinning-frame is not confined to the spinning of cotton; but is now employed, with nearly equal success, in the woollen, the worsted, and the flax manufacture. It is the same with the power-loom. Hitherto, indeed, it has been principally employed in the manufacture of cotton goods, particularly of calicos and fustians; but it is well adapted for weaving all sorts of plain silk, linen, woollen, and worsted goods; and it is now beginning to be largely introduced into most of these departments. At present (1838) there are, probably, not fewer than 130,000 power-looms at work in Great Britain, of which England may possess from 100,000 to 105,000.

Such is a hasty, and, necessarily, very imperfect, sketch of the leading steps in the astonishing progress of the British cotton manufacture. At present, it is by far the most wonderful triumph of mechanical genius and invention that the world has ever seen. "The operations," says Mr. Baines, "are numerous; and every one of them is performed by machinery, without the help of human hands, except merely in transferring the material from one machine to another. It is by iron fingers, teeth, and wheels, moving with exhaustless energy and devouring speed, that the cotton is opened, cleaned, spread, carded, drawn, roved, spun, wound, warped, dressed, and woven. The various machines are proportioned to each other in regard to the capability of their work; and they are so placed in the mill as to allow the material to be carried from stage to stage with the least possible loss of time. All are moving at once, the operations chasing each other; and all derive their motion from the mighty engine, which, firmly seated in the lower part of the building, and constantly fed with water and fuel, toils through the day with the strength of, perhaps, a hundred horses. Men, in the meanwhile, have merely to attend on this wonderful series of mechanism, to supply it with work, to oil its joints, and to check its slight and infrequent irregularities; each workman performing, or, rather, superintending, as much work as could have been done by 200 or 300 men 60 years ago.* At the approach of darkness the building is illuminated by jets of flame, whose brilliance mimics the light of day — the produce of an invisible vapour, generated on the spot. When it is remembered that all these inventions have been made within the last 70 years, it must be acknowledged that the cotton-mill presents the most striking example of the dominion obtained by human science over the powers of nature of which modern times can boast. That this vast aggregate of important discoveries and inventions should, with scarcely an exception, have proceeded from English genius, must be a reflection highly satisfactory to every Englishman." — (*Cotton Manufacture*, p. 243.)

The following table (*see next page*), exhibiting the imports, exports, &c., of cotton wool since 1697, sets the wonderful progress of the manufacture in the clearest point of view.

Sources whence the Supplies of Cotton Wool are derived. — Previously to 1795, our supplies of raw cotton were principally brought from the West Indies, South America, India, and the Levant. The United States, which, for many years past, has been the grand cotton mart, producing more for exportation than all the other countries of the world taken together, was then only beginning to come into the field. A little cotton had, indeed, been raised, for domestic use, in the Southern States, previously to the revolutionary war; but its produce was quite inconsiderable. In 1791 it began, for the first time, to be exported; the trifling quantity of 189,316 lbs. having been shipped in the course of that year, and 138,328 lbs. in 1792. Such was the late and feeble beginning of the American cotton trade! There is nothing in the history of industry to compare with its subsequent progress and extension, unless it be the growth of the manufacture in this country.

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* Mr. Kennedy stated, in 1815, since which time many improvements have been made, that the united effects of the spinning-machines amounted to this: that the labour of one person, aided by them, can now produce as much yarn, in a given time, as 200 could have produced 50 years ago. — (*Rise and Progress of the Cotton Trade.*) Mr. Farey, in his *Treatise on the Steam Engine*, says, "An extensive cotton-mill is a striking instance of the application of the greatest powers to perform a prodigious quantity of light and easy work. A steam-engine of 100 horse power, which has the strength of 880 men, gives a rapid motion to 50,000 spindles, for spinning fine cotton-thread: each spindle forms a separate thread; and the whole number work together, in an immense building erected on purpose, and so adapted to receive the machines that no room is lost. Seven hundred and fifty people are sufficient to attend all the operations of such a cotton-mill; and, by the assistance of the steam-engine, they will be enabled to spin as much thread as 200,000 persons could do without machinery, or one person can supply it with fuel. Each spindle in a mill will produce between two and a half and three hanks (of 840 yards each) per day, which is upwards of a mile and a quarter of thread in 12 hours; so that the 50,000 spindles will produce 62,500 miles of thread every day of 12 hours, which is more than a sufficient length to go two and a half times round the globe."

Account of the Imports and Exports of Cotton Wool, into and from Great Britain, since 1697.

Years.	Imports.	Exports.
1697	1,976,359	—
1701	1,985,868	—
1700 to 1705 (Average.)	1,170,881	—
1710	715,008	—
1720	1,972,805	—
1730	1,545,472	—
1741	1,645,031	—
1751	2,976,610	—
1764	3,870,392	—
1771 to 1775 (Average.)	4,764,589	—
1776 to 1785 (Average.)	6,766,613	—
1781	5,198,778	96,788
1782	11,828,039	421,229
1783	9,735,663	177,626
1784	11,482,083	201,845
1785	18,400,384	407,496
1786	19,475,020	323,153
1787	23,250,268	1,073,381
1788	20,467,436	853,146
1789	32,576,023	297,837
1790	31,447,605	844,154
1791	28,706,675	363,442
1792	34,907,497	1,485,465
1793	19,040,929	1,171,566
1794	24,358,567	1,349,950
1795	26,401,340	1,193,737
1796	32,126,357	694,962
1797	23,354,371	609,058
1798	31,880,641	601,139
1799	43,379,278	844,671
1800	56,010,732	4,416,610
1801	56,004,305	1,860,872
1802	60,345,600	3,730,180
1803	53,812,284	1,561,053
1804	61,867,329	503,171
1805	59,682,406	804,243
1806	58,176,283	651,867
1807	74,925,306	2,176,283
1808	43,605,982	1,644,867
1809	92,812,282	4,351,105
1810	132,488,935	8,787,109
1811	91,576,535	1,266,867
1812	63,025,936	1,440,912
1813	50,966,000	—
1814	60,060,239	6,282,437
1815	99,306,343	6,780,392
1816	93,920,055	7,105,034
1817	124,912,968	8,155,442
1818	177,282,158	15,159,453
1819	149,739,820	16,622,969

Cotton Wool imported, exported, and entered for Consumption, from 1820 to 1836.

Years.	Quantity imported.	Quantity exported.	Quantity entered for Consumption.
	lbs.	*lbs.*	*lbs.*
1820	151,672,655	6,024,038	152,829,633
1821	132,536,620	14,589,497	137,401,549
1822	142,837,628	18,267,776	143,428,127
1823	191,402,503	9,318,402	186,311,070
1824	149,380,122	13,299,505	141,038,743
1825	228,005,291	18,004,953	202,546,869
1826	177,607,401	24,474,920	162,889,012
1827	272,448,909	18,134,170	249,804,396
1828	227,760,642	17,396,776	208,987,744
1829	222,767,411	30,289,115	204,097,037
1830	263,961,452	8,534,976	269,616,640
1831	288,674,853	22,308,555	273,249,653
1832	286,832,525	18,027,940	259,421,463
1833	303,656,837	17,363,882	293,682,976
1834	326,875,425	24,461,963	302,935,657
1835	363,702,963	32,779,734	326,407,692
1836	406,959,057	31,739,763	363,684,232

American cotton is generally known by the names of *sea island* and *upland*. The former grows along the low sandy shores of Carolina, Georgia, &c. It is long in the staple, has an even silky texture, a yellowish tinge, is easily separated from the seed, and is decidedly superior to every other description of cotton hitherto brought to market. Unluckily, however, it can be raised only in certain situations; so that its quantity is limited, and has not, in fact, been at all increased since 1805. At present, 97 or 98 per cent. of the cotton produced in the United States consists of what is denominated upland, from its being grown on the comparatively high ground at a distance from the coast. Though of varying qualities, it is all short-stapled; and its separation from the seed and pod, if attempted by the hand, is so very difficult, that the cotton is hardly worth the trouble and expense. This, however, was the only way in which it could be made available for home use or exportation in 1791; and, had any one then ventured to predict that 10,000,000 lbs. of upland cotton would ever be exported, he would have been looked upon as a visionary dreamer. But the genius and talent of Mr. Eli Whitney did for the cotton-planters of the United States what Arkwright did for the manufacturers of England. He invented a machine by which the cotton wool is separated from the pod, and cleaned, with the greatest ease and expedition; and, in this way, doubled the wealth and industry of his countrymen.—(*Pitkin's Statistics of the United States*, p. 109. ed. 1835.) Mr. Whitney's invention came into operation in 1793; and, in 1794, 1,601,760 lbs., and, in 1795, 5,276,300 lbs. of cotton were exported! The effect of the machine was, like that of Arkwright's, all but miraculous. The exports of cotton from America, during the year ending 30th of September, 1835, amounted to the enormous sum of 387,358,992 lbs.; worth, when shipped, 64,961,302 dollars. And it is not going too far to say that, had not Whitney's or some equivalent machine been invented, there is no reason to think that the exports during the above year would have exceeded 37,000,000 lbs., if so much; so that the existence of the other 350,000,000 lbs., with the greater part of that retained for home consumption, may be ascribed to Mr. Whitney's machine, as to its real source and origin! *

Whitney, Arkwright, and Watt, were all necessary to each other. Without an adequate supply of cotton, Arkwright's inventions would have been comparatively unimportant; without the demand for the raw material, which they occasioned, Whitney's machine would have been but little employed; and, without the invention of Watt, neither that of Arkwright nor of Whitney could have been brought into full play. So true it is that *omnes artes quæ ad humanitatem pertinent, habent quoddam commune vinculum, et quasi cognatione quadam inter se continentur.* It would be curious to investigate how many persons in the Old and New Worlds, at present, directly depend for subsistence on the inventions of these three individuals. They certainly amount to several millions; at the same time that they have made immense additions to the comforts and enjoyments of almost every one else.

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* Like too many inventors, Mr. Whitney enriched others without materially enriching himself. South Carolina gave him 50,000 dollars for liberty to use the machine, and he received smaller sums from North Carolina and Tennessee. But Georgia, which was signally benefited by the invention, piratically invaded his patent; and, before he succeeded in establishing his rights in the Supreme Court of the United States, 13 years of his patent had expired, and he had expended a large portion of the sums paid him by the other states. In 1812, after the vast importance of his invention had been recognised in all parts of the Union and of the world, Mr. Whitney petitioned Congress for a renewal of his patent, or for some indemnity for the losses he had sustained by its invasion. But, notwithstanding a Committee of Congress made a strong report in his favour, the thing fell to the ground; and Mr. Whitney died, without having gained anything by an invention by which his countrymen have already realised a clear profit of 200,000,000*l.* sterling. —(*Pitkin's Statistics*, p. 110.)

Next to the United States, but at a very great distance from them, Brazil, the East Indies, and Egypt, are the countries which furnish the largest supplies of cotton for exportation. We subjoin an

Account of the Quantity of Cotton Wool imported into Great Britain and Ireland during each of the Six Years ending with 1834; specifying the Countries whence it was imported, and the Quantity brought from each; showing, also, the Quantities exported, and those left for Consumption.

Countries.	1829.	1830.	1831.	1832.	1833.	1834.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Germany	- -	69,296	- -	116,297	3,909	7,296
Holland Belgium }	7	7,830	- -	480		
France	3	- -	- -	- -	- -	81,497
Portugal, Proper	27,893	86,967	- -	59,050	943,381	6,524
Azores	- -	3,584	110			
Spain and the Balearic Islands	- -	- -	- -	- -	- -	1,792
Gibraltar	1,928					
Italy and the Italian Islands	- -	15	86,649	21,739	15,708	896,456
Malta	61,284	27,073	843,895	28,063	17,298	
Turkey and Continental Greece (exclusive of the Morea)	91,906	853,977	366,550	289,779	433,898	410,730
Egypt (Ports on the Mediterranean)	5,894,480	3,048,683	7,714,474	8,324,111	553,364	444,437
Western Coast of Africa	- -	- -	- -	- -	- -	4,203
Cape of Good Hope	- -	- -	- -	- -	38	39,714
Mauritius	30,599	14,056				
East India Company's Territories and Ceylon	24,857,990	12,481,761	25,805,153	35,178,625	32,755,164	32,920,865
Sumatra and Java	- -	- -	- -	- -	- -	3,866
Philippine Islands	16,011	29,672	8,420	40,879	37,906	
New South Wales, Van Diemen's Land, and Swan River	- -	479				
New Zealand, and South Sea Islands	- -	-	- -	5		
British North American Colonies	32,419	2,473	316,016	7,158	145,526	3,332
British West Indies	4,640,414	3,429,247	2,401,685	2,040,428	2,084,862	2,296,525
Hayti	149,048	166,266	251,179	59,413	389,791	223,004
Cuba and other Foreign West Indies	128,896	10,174	- -	314	- -	3,794
United States of America	157,187,396	210,885,358	219,333,628	219,756,753	237,506,758	269,203,075
Mexico	- -	- -	- -	1,396		
Guatemala	- -	- -	- -	- -	- -	23,471
Columbia	679,504	221,381	334 691	293,602	305,033	1,004,840
Brazil	28,878,386	33,092,072	31,695,761	20,109,560	28,463,821	19,291,396
States of the Rio de la Plata	- -	- -	- -	3,729	322	556
Chili	- -	- -	10,624	- -	56	74,701
Peru	69,378	45,629	57,027	1,194	- -	4,055
Isles of Guernsey, Jersey, Alderney, and Man	- -	- -	- -	- -	- -	296
Total	222,767,411	263,961,452	288,674,853	286,832,525	303,656,837	326,875,425
Exports	30,289,115	8,534,976	22,308,555	18,027,940	17,363,882	24,461,963
Left for consumption	192,478,296	255,426,476	266,366,298	268,804,585	286,292,955	302,413,462

Notwithstanding the vastly increased demand for cotton-wool during the last 20 years, the supply, contrary to what some had anticipated, has increased in a more than equal proportion; and there has, in consequence, been a material reduction of price. Subjoined is an

Account of the Prices of *good* Upland, or, as it is frequently called, bowed Georgia Cotton, in the Liverpool Market, since 1806:—

Years.		s.	d.		s.	d.		Years.		s.	d.		s.	d.	
1806	-	1	3	to	1	9½	per lb.	1821	-	0	7	to	0	11½	per lb.
1807	-	1	3½	–	1	7	—	1822	-	0	5¾	–	0	11	—
1808	-	1	3½	–	3	0	—	1823	-	0	6¼	–	0	10¾	—
1809	-	1	2	–	2	10	—	1824	-	0	7	–	0	10½	—
1810	-	1	2½	–	1	10½	—	1825	-	0	6	–	1	7½	—
1811	-	1	0¼	–	1	4	—	1826	-	0	5¼	–	0	8¾	—
1812	-	1	1	–	1	11½	—	1827	-	0	4⅞	–	0	7¾	—
1813	-	1	9	–	2	6	—	1828	-	0	5	–	0	7⅜	—
1814	-	1	11	–	3	1	—	1829	-	0	4⅜	–	0	7	—
1815	-	1	6	–	2	1½	—	1830	-	0	5⅜	–	0	7⅞	—
1816	-	1	3	–	1	9	—	1831	-	0	4¾	–	0	7¼	—
1817	-	1	4½	–	1	11¼	—	1832	-	0	5	–	0	8	—
1818	-	1	4½	–	1	10	—	1833	-	0	6½	–	1	0½	—
1819	-	0	10	–	1	7¾	—	1834	-	0	8¾	–	0	10¾	—
1820	-	0	8	–	1	1¾	—	1835	-	0	7½	–	0	10¼	—

Fall in the Price of Cotton Goods.—In consequence, partly, of this reduction in the cost of the raw material, but in an incomparably greater degree of the wonderful improvements in the manufacture, the price of cotton goods has undergone an extraordinary fall since 1780, and even since 1810. They are now, indeed, so extremely cheap, that there is hardly an individual so very poor as to be unable to supply himself abundantly with cottons. This has improved the dress and appearance, and added to the comfort, of the great bulk of the female part of the population, not merely of this, but also of other countries, in a degree and to an extent not easy to be imagined.

Cost and selling Price of one Piece of Calico from 1814 to 1833.

Years.	Price of one Piece in Warp.		Price of one Piece in Weft.		Expense of Sizing &c.	Cost Price of one Piece; first seven Years being second Quality 74's, rest third 74's.			Average Prices sold for in Manchester through the Year.		
	s.	d.	s.	d.	d.	£	s.	d.	£	s.	d.
1814	9	5	7	5½	6	1	3	10½	1	4	7
1815	7	10¼	6	3	—	0	18	10½	0	19	8¾
1816	7	0½	5	5¼	—	0	16	4¼	0	16	8½
1817	6	6¾	5	2	—	0	15	3	0	16	11
1818	6	9	5	4½	—	0	16	2½	0	16	8½
1819	5	3¼	4	2	—	0	13	0¼	0	13	9
1820	4	2½	3	6	—	0	11	1½	0	12	1½
1821	3	9¾	2	6	5	0	9	10½	0	9	8¼
1822	3	8¼	2	3	—	0	8	11	0	9	3½
1823	3	8¾	2	2½	—	0	8	8¼	0	8	1¼
1824	3	8¼	2	2½	—	0	8	5¼	0	8	5¾
1825	3	4	2	2	—	0	8	0½	0	8	5¼
1826	2	8	1	10	—	0	6	2¾	0	6	3¼
1827	2	6½	1	9½	—	0	6	3½	0	6	6
1828	2	8	1	9	—	0	6	4½	0	6	5¼
1829	2	8	1	9	—	0	5	11	0	5	8
1830	2	9	1	10	—	0	6	5½	0	6	3¼
1831	2	3½	1	9½	—	0	6	0¾	0	6	2¼
1832	2	4	1	9	—	0	5	8¾	0	5	8
1833	2	5	1	9¼	—	0	5	10¾	0	6	2

Account of the Price of Cotton Yarn, No. 100, from 1786 to 1832.

	£	s.	d.		£	s.	d.
In 1786, Yarn, No. 100, sold for	1	18	0	In 1799, Yarn, No. 100, sold for	0	10	11
1787 — —	1	18	0	1800 — —	0	9	5
1788 — —	1	15	0	1801 — —	0	8	9
1789 — —	1	14	0	1802 — —	0	8	4
1790 — —	1	10	0	1803 — —	0	8	4
1791 — —	1	9	9	1804 — —	0	7	10
1792 — —	0	16	1	1805 — —	0	7	10
1793 — —	0	15	1	1806 — —	0	7	2
1794 — —	0	15	1	1807 — —	0	6	9
1795, spun from Bourbon cot.	0	19	0	After many fluctuations,			
1796 ditto	0	19	0	In 1829, it sold for —	0	3	2
1797 — —	0	19	0	1832 — —	0	2	11
1798, from Sea Island cotton	0	9	10				

Export of Cotton Goods. — Down to 1750, the exports of cotton goods, or, rather, of goods consisting partially of cotton, were so very inconsiderable that they hardly attracted the least attention from any of our commercial writers. But, after the inventions of Arkwright began to come into general operation, the exports increased with unprecedented rapidity. At the commencement of the present century they were nearly as large as the export of woollens, the produce of the old and staple manufacture of the country. But, though the export of woollen goods has increased considerably since 1800, that of cotton goods and yarn has increased so much more that it is now about *three* times the amount of the other; and *constitutes, indeed, about a half of the total exports of the empire!*

Account of the official Value of the Cotton Manufactures exported from Great Britain from 1697 to 1797.

Years.	Official Value of Exports.	Years.	Official Value of Exports.
	£		£
1697	5,915	1786	915,046
1701	23,253	1787	1,101,457
1710	5,698	1788	1,252,240
1720	16,200	1789	1,231,537
1730	13,524	1790	1,662,369
1741	20,709	1791	1,875,046
1751	45,986	1792	2,024,368
1764	200,354	1793	1,733,807
1765	248,348	1794	2,376,077
1766	220,759	1795	2,433,331
1780	355,060	1796	3,214,020
1785	864,710	1797	2,580,568

For other accounts of exports see the next and following pages.

Present Value of the Cotton Manufacture. — Amount of Capital and Number of Persons employed in it. — It would be very desirable to have some accurate information with respect to these particulars. But the data on which all estimates of this sort are founded being necessarily very imperfect, it is impossible to arrive at any thing like precision. We gave, in the second edition of our Commercial Dictionary, published in 1834, the following details, which have reference to the state of the manufacture in 1833.

ACCOUNT of the official and the declared or real Value of the Cotton Manufactures and Yarn exported from Great Britain since 1798.

Years.	Manufactured Goods.		Twist and Yarn.		Total Exports.	
	Official Value.	Declared Value.	Official Value.	Declared Value.	Official Value.	Declared Value.
	£	£	£	£	£	
1798	3,572,217	Records destroyed by fire.	30,271	Records destroyed.	3,602,488	Records destroyed.
1799	5,593,407		204,602		5,808,009	
1800	5,406,501		447,556		5,854,057	
1801	6,606,368		444,441		7,050,809	
1802	7,195,900		428,605		7,624,505	
1803	6,442,037		639,404		7,081,441	
1804	7,834,564		902,208		8,746,772	
1805	8,619,990		914,475		9,534,465	
1806	9,753,824		736,225		10,489,049	
1807	9,708,046		601,719		10,309,765	
1808	12,503,918		472,078		12,986,096	
1809	18,425,614		1,020,352		19,445,966	
1810	17,898,519		1,053,475		18,951,994	
1811	11,529,551		483,598		12,013,149	
1812	15,723,225		794,465		16,517,690	
1813	Records	destroyed.				
1814	16,535,528	17,241,884	1,119,850	2,791,248	17,655,378	20,033,132
1815	21,480,792	18,946,835	808,853	1,674,021	22,289,645	20,620,956
1816	16,183,975	12,948,944	1,380,486	2,628,448	17,564,461	15,577,392
1817	20,133,966	13,997,820	1,125,258	2,014,181	21,259,224	16,012,001
1818	21,292,354	16,372,212	1,296,776	2,395,305	22,589,130	18,767,517
1819	16,696,539	12,180,129	1,585,753	2,519,783	18,282,292	14,699,912
1820	20,509,926	13,690,115	2,022,153	2,826,643	22,531,079	16,516,758
1821	21,642,936	13,788,977	1,898,679	2,305,830	23,541,615	16,094,807
1822	24,559,272	14,521,211	2,351,771	2,697,590	26,911,043	17,218,801
1823	24,119,359	13,650,896	2,425,411	2,625,947	26,544,770	16,276,843
1824	27,171,556	15,241,119	2,984,345	3,135,396	30,155,901	18,376,515
1825	26,597,575	15,046,902	2,897,706	3,206,729	29.495,281	18,253,631
1826	21,445,743	10,522,407	3,748,527	3,491,268	25,194,270	14,013,675
1827	29,203,138	13,956,826	3,979,760	3,545,568	33,182,898	17,502,394
1828	28,981,575	13,545,188	4,485,842	3,594,926	33,467,417	17,140,114
1829	31,810,474	13,420,536	5,458,958	3,974,039	37,269,432	17,394,575
1830	35,395,400	15,203,713	5,655,569	4,132,258	41,050,969	19,335,971
1831	33,682,475	13,207,947	5,674,600	3,974,989	39,357,075	17,182,936
1832	37,060,750	12,622,880	6,725,505	4,721,796	43,786,255	17,344,676
1833	40,058,153	13,754,992	6,279,057	4,704,008	46,337,210	18,459,000
1834	44,266,903	15,302,571	6,802,238	5,211,015	51,069,141	20,513,586
1835	44,849,038	16,393,170	7,399,851	5,706,563	52,248,889	22,099,733
1836	50,646,912	18,482,586	7,844,819	6,120,326	58,491,731	24,602,912
1837	41,900,110	13,632,146	9,211,732	6,955,936	51,111,842	20,588,082

" Mr. Huskisson stated, in his place in the House of Commons, in March, 1824, that he believed the total value of the cotton goods, then annually manufactured in Great Britain, amounted to the prodigious sum of *thirty-three and a half millions;* and, we believe, we shall be about the mark, if we estimate their present value at *thirty-four* millions! If, indeed, we took the increase in the imports of the raw material as a test of the increase in the value of the manufacture, we should estimate it a great deal higher. But the improvements that

Account of the Quantity and declared Value of British Cotton manufactured Goods and Yarn exported from the United Kingdom in 1836; specifying the Description and Quantity of Goods sent to each Country. — (*Papers published by Board of Trade*, vol. vi. p. 106.)

Countries to which exported.	White or plain Cottons.		Printed or dyed Cottons.		Hosiery and small Wares.	Twist and Yarn.		Total Declared Value.
	Yards.	Declared Value.	Yards.	Declared Value.	Declared Value.	Pounds.	Declared Value.	
		L.		L.	L.		L.	L.
Russia - - -	1,417,926	54,511	190,098	8,110	6,312	19,178,483	1,257,411	1,326,344
Sweden - -	63,794	1,758	38,328	1,797	1,100	836,734	68,675	73,325
Norway - -	257,177	7,665	332,035	10,606	1,938	134,352	9,218	29,437
Denmark - -	55,581	1,379	108,601	2,727	140	66,740	3,960	8,206
Prussia - -	- -	- -	- -	- -	9	15,750	1,453	1,462
Germany - -	12,219,789	289,086	25,238,668	688,122	194,857	31,325,478	1,960,049	3,132,114
Holland - -	19,650,075	257,920	10,080,302	316,942	48,101	13,854,746	1,191,229	1,794,192
Belgium - -	1,062,775	44,627	2,363,641	97,589	116,892	31,674	5,357	264,265
France - -	1,562,884	34,965	1,971,320	52,654	127,668	105,214	47,123	262,410
Portugal, Proper -	13,210,339	245,864	14,754,680	349,207	20,277	306,940	22,669	638,007
Azores -	390,321	9,290	643,172	15,840	749	25,280	1,143	27,022
Madeira -	621,790	9,944	571,722	13,990	935	744	42	24,911
Spain and the Balearic Islands - -	162,144	4,466	504,953	12,702	5,560	60	20	22,748
Canaries - -	349,351	8,701	450,587	12,666	860	1,072	51	22,278
Gibraltar - - -	10,155,916	250,362	10,560,544	325,015	16,904	100,258	6,789	599,160
Italy and the Italian Islands - -	32,890,601	712,219	24,620,264	693,985	47,755	8,573,605	524,374	1,978,333
Malta - - -	1,760,059	42,878	693,844	19,592	1,618	165,708	9,227	73,315
Ionian Islands -	674,241	15,806	1,084,697	26,739	749	112,907	6,948	48,242
Morea and Greek Islands - - -	46,624	2,711	39,515	2,394	43	70	7	5,155
Turkey - -	25,815,654	716,269	21,459,685	694,681	4,889	1,881,965	112,535	1,528,374
Syria and Palestine -	310,319	9,513	493,444	15,800	95	32,000	2,110	27,518
Egypt - -	4,473,216	101,701	1,085,821	32,349	139	300,140	20,456	154,625
Tripoli, Tunis, Algiers, and Morocco -	776,377	15,890	274,698	3,987	218	- -	- -	19,425
Western Coast of Africa	1,302,243	38,356	6,205,810	171,253	409	3,066	565	210,583
Cape of Good Hope -	3,483,423	80,707	3,451,927	102,197	10,762	22,572	1,207	194,873
St. Helena - -	21,667	590	11,726	340	5	50	5	940
Mauritius - -	1,474,119	43,173	1,066,965	36,917	7,637	- -	- -	87,727
Arabia - -	35,700	1,507	76,620	3,065	- -	- -	- -	4,592
East India Company's Territories & Ceylon	55,215,676	1,396,296	19,064,830	576,520	47,547	6,592,310	561,878	2,582,221
Sumatra, Java, & other Islands of the Indian Seas - - -	3,872,506	112,273	1,632,672	51,419	2,412	143,343	12,360	178,464
Philippine Islands -	877,954	31,210	219,222	12,900	15	- -	- -	44,125
China - - -	10,275,339	271,401	2,544,171	98,774	286	3,158,870	212,933	583,394
New South Wales, Van Dieman's Land, and other Australian Settlements - -	1,725,826	48,164	992,026	33,590	14,415	78,022	4,454	100,623
British North American Colonies -	10,388,870	268,040	13,094,952	349,041	48,368	405,155	22,706	688,145
British West Indies -	18,972,770	456,908	20,763,570	545,464	55,036	34,380	3,372	1,060,780
Hayti - - -	1,328,009	39,666	3,560,533	107,107	3,694	- -	- -	150,467
Cuba & other Foreign West Indian Colonies	8,547,670	212,157	13,377,869	365,924	18,095	202	21	596,197
United States of America - -	20,830,403	695,224	41,211,736	1,419,837	361,905	212,203	14,753	2,491,719
Mexico - -	1,505,436	44,784	2,148,842	69,281	7,963	477,836	33,633	155,661
Guatemala - -	—	—	—	—	—	—	—	—
Columbia - -	2,877,449	56,479	2,710,404	62,646	3,146	- -	- -	122,271
Brazil - - -	37,082,838	755,111	35,727,268	944,883	62,795	7,376	816	1,763,605
States of the Rio de la Plata - -	10,885,301	227,026	7,742,896	208,906	20,588	4,600	350	456,870
Chili - - -	10,017,827	212,797	11,307,423	356,340	25,001	- -	- -	594,338
Peru - - -	4,977,425	137,090	8,804,287	280,701	20,441	1,900	255	438,487
Isles of Guernsey, Jersey, Alderney, Man, &c. - - -	835,158	40,870	111,182	3,639	19,907	3,261	242	64,658
Total in 1836 -	324,467,179	7,985,349	313,200,448	9,197,818	1,328,525	88,191,046	6,120,366	24,632,058
Total in 1835 -	277,704,525	6,910,506	279,811,176	8,270,925	1,240,284	83,214,198	5,706,589	22,128,304

have been made in the different processes, and the fall in the prices o raw cotton, have had so powerful an influence in reducing the price of the goods brought to market, that, notwithstanding the increase of their quantity, their total value must have remained nearly constant.

"The average annual quantity of cotton-wool imported, after deducting the exports, may be taken at about 260,000,000 lbs. weight.*

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* It now (1838) exceeds 300,000,000 lbs.

It is supposed that of this quantity about 20,000,000 lbs. are used in a raw or half-manufactured state, leaving a balance of 240,000,000 lbs. for the purposes of manufacturing, the cost of which may be taken, at an average, at 7*d.* per lb. Deducting, therefore, from the total value of the manufactured goods, or 34,000,000*l.*, the value of the raw material, amounting to 7,000,000*l.*, there remains 27,000,000*l.*; which, of course, forms the fund whence the wages of the persons employed in the various departments of the manufacture, the profits of the capitalists, the sums required to repair the wear and tear of buildings, machinery, &c., the expense of coals, &c. &c., must all be derived. If, then, we had any means of ascertaining how this fund is distributed, we should be able, by taking the average of wages and profits, to form a pretty accurate estimate of the number of labourers, and the quantity of capital employed. But here, unfortunately, we have only probabilities and analogies to guide us. It may, however, be confidently assumed, in the first place, that, in consequence of the extensive employment of highly valuable machinery in all departments of the cotton manufacture, the proportion which the profits of capital, and the sum to be set aside to replace its wear and tear, bear to the whole value of the manufacture, must be much larger than in any other department of industry. We have heard this proportion variously estimated, at from a fourth to a half of the total value of the manufactured goods, exclusive of the raw material; and, as the weight of authority seems to be pretty much divided on the subject, we shall take an intermediate proportion. Assuming, therefore, that the profits of the capital employed in the cotton manufacture, the wages of superintendence, &c., the sum required to replace the wear and tear of machinery and buildings, and to furnish coals, &c., amount together to *one-third* of the value of the manufactured goods, exclusive of the raw material, or to 9,000,000*l.*, a sum of 18,000,000*l.* will remain as the wages of the spinners, weavers, bleachers, &c., engaged in the manufacture; and taking, inasmuch as a large proportion of children under 16 years of age are employed, the average rate of wages at only 22*l.* 10*s.* a year, we shall have (dividing 18,000,000 by 22·5), 800,000 as the total number of persons directly employed in the different departments of the manufacture.

"We should mistake, however, if we suppose that this number, great as it certainly is, comprised the whole number of persons to whom the cotton manufacture furnishes subsistence, exclusive of the capitalists. Of the sum of 9,000,000*l.* set apart as the profit of the capitalists, and the sum required to furnish coal and to defray the wear and tear of machinery, &c., a large proportion must annually be laid out in paying the wages of engineers, machine-makers, iron-founders, smiths, joiners, masons, bricklayers, &c. It is not easy to say what this proportion may amount to; but, taking it at a *third*, or 3,000,000*l.*, and supposing the rate of wages of each individual to average 30*l.* a year, the total number employed in the various capacities alluded to will be (3,000,000 divided by 30) 100,000; and a sum of 6,000,000*l.* will remain to cover the profits of the capital employed in the various branches of the manufacture, to repair the different parts of the machinery and buildings as they wear out, and to buy coal, flour, &c. The account will, therefore, stand as under:—

		£
Total value of every description of cotton goods annually manufactured in Great Britain		34,000,000
Raw material, 240,000,000 lbs. at 7*d.* per lb.	£7,000,000	
Wages of 800,000 weavers, spinners, bleachers, &c. at 22*l.* 10*s.* a year each	18,000,000	
Wages of 100,000 engineers, machine-makers, smiths, masons, joiners, &c. at 30*l.* a year each	3,000,000	
Profits of the manufacturers, wages of superintendence, sums to purchase the materials of machinery, coals, &c.	6,000,000	
		34,000,000
The capital employed may be estimated as follows:—		
Capital employed in the purchase of the raw material		4,000,000
Capital employed in the payment of wages		10,000,000
Capital vested in spinning mills, power and hand-looms, workshops, warehouses, stocks on hand, &c.		20,000,000
		£34,000,000

"Now this sum of 34,000,000*l.**, supposing the interest of capital, inclusive of the wages of superintendence, &c., to amount to 10 per cent., will yield a sum of 3,400,000*l.*; which, being deducted from the 6,000,000*l.* profits, &c., leaves 2,600,000*l.* to purchase materials to repair the waste of capital, the flour required for dressing, the coals necessary in the employment of the steam engines, to effect insurances, and to meet all other outgoings.

"The aggregate amount of wages, according to the above statement, is 21,000,000*l.*; but there are not many departments of the business in which wages have to be advanced more than 6 months before the article is sold. We, therefore, incline to think that 10,000,000*l.* is a sufficient (perhaps too great) allowance for the capital employed in the payment of wages.

"If we are nearly right in these estimates, it will follow — allowance being made for old and infirm persons, children, &c. dependent on those actually employed in the various departments of the cotton manufacture, and in the construction, repair, &c. of the machinery and buildings required to carry it on — that it must furnish, on the most moderate computation, subsistence for from 1,200,000 to 1,400,000 persons! And for this new and most prolific source of wealth we are indebted partly, and principally, as already shown, to the extraordinary genius and talent of a few individuals; but, in a great degree, also, to that security of property and freedom of industry which give confidence and energy to all who embark in industrious undertakings, and to that universal diffusion of intelligence which enables those who carry on any work to press every power of nature into their service, and to avail themselves of productive capacities of which a less instructed people would be wholly ignorant." — (*Commercial Dictionary*, art. COTTON.)

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* Mr. Kennedy, to whose opinion, on a matter of this sort, the greatest deference is due, considers this estimate as a great deal too high. We cannot, however, bring ourselves to believe that such is really the case. It appears, from the official accounts, that the real or declared value of the cotton fabrics exported in 1832 amounted to 12,622,880*l.*, and that of the twist to 4,726,796*l.* Now it appears from the statements in *Burn's Glance*, and other good authorities, that the weight of the cotton yarn retained at home to be wrought up into fabrics for domestic use is about 10 or 12 per cent. greater than the weight of the yarn exported in the shape of manufactured goods. But, without taking this greater weight into account, if we suppose that the fabrics retained at home are nearly equal in point of quality to those exported, the value of the manufacture must be at least 30,000*l.*: viz. fabrics exported, 12,622,000*l.*; twist, 4,721,000*l.*; and fabrics consumed at home, 12,622,000*l.* But a very large proportion of our exports consists of comparatively coarse fabrics, destined for the West Indies, Brazil, &c.; and we have been assured by those well acquainted with the trade, that the value of the fabrics made use of at home cannot be less, at an average, than from 30 to 40 per cent. above the value of those exported: but taking it at only 30 per cent., it will make the total value of the manufacture 34,000,000*l.* We do not well see how this statement can be shaken. The exporters have no motive to exaggerate the real value of the goods and yarn sent abroad; but unless they have done so to a very great extent, it will be difficult to impeach the above conclusions.

Since the Dictionary was published, some additional details, with respect to the manufacture, have been obtained through the Commissioners of Factory Inquiry, and the Factory Inspectors. These have been carefully analysed and compared by Mr. Baines; and his estimate, though formed on different principles, agrees substantially with the above, affording a pretty strong presumption in favour of their accuracy. We subjoin Mr. Baines's estimate, and the details connected therewith: —

" Estimated Yearly Value of the British Cotton Manufacture.

Wages of		£
237,000	[*]operatives engaged in spinning and power-loom weaving -	6,044,000
250,000	[†]hand-loom weavers, at 7*s.* per week each - - -	4,375,000
45,000	calico printers, at 10*s.* per week each - - - -	1,170,000
159,300	[‡]lace workers (including 100,000 employed in embroidery, and 30,000 in mending, pearling, drawing, and finishing) -	1,000,000
33,000	makers of cotton hosiery - - - - -	505,000
	Bleachers, dyers, calenderers, fustian-cutters, machine-makers; makers of steam-engines, cards, rollers, spindles, shuttles, looms, and reeds; smiths, joiners, builders of all classes, millwrights, carriers, carters, warehousemen, &c. &c. &c. say - - - - - - - - -	4,000,000
Raw material (spun in 1833) 283,675,200 lbs.[§] at 7*d.* per lb.		8,244,693
Profits of capital, sums paid for materials of machinery, coals, flour for dressing, and other outgoings[‖] - - - -		6,000,000
		£ 31,338,693

[*] Mr. Stanway, from the Returns of the mill-owners, ascertained that 67,819 mill operatives in England received 141,635*l.* 5*s.* 7¾*d.* as wages for a month of 4 weeks: at the same rate, 237,000 mill operatives, the number in the United Kingdom, would earn 6,434,453*l.* per year. But, as wages in Scotland are 10 per cent. and in Ireland 15 or 20 per cent. lower than in England, and as 2 weeks' wages in the year ought to be deducted for holidays, the amount of wages paid will be about 6,044,000*l.*

[†] In my estimate of the *number* of weavers I have not reckoned the winders, draw-boys, &c. who assist them, and who must amount to a great many thousands; but, in the supposed average of their *wages*, I include those earned by the assistants of the weavers as well as by the weavers themselves. The sum of 7*s.* per week for the *gross* wages of all the hand-loom weavers is, I am convinced, a fair estimate. The calculation is for 50 weeks in the year.

[‡] The wages paid to the women and children employed in embroidery, mending, &c. the lace, must be extremely low. Mr. Felkin estimates the whole value of the lace manufactured in England at 1,850,650*l.*; deduct the cost of the yarn, 635,000*l.*, and there remains the sum of 1,215,650*l.*; of which, probably, 1,000,000*l.* consists of wages to the work-people,

[§] The quantity stated by Burn in the *Commercial Glance*.

[‖] "I adopt this sum from Mr. M'Culloch, thinking it a moderate estimate."

"The only item in the above estimate, which I feel to be subject to considerable doubt, is the sum of 4,000,000*l.* as the wages of the bleachers, dyers, machine-makers, and numerous other classes of workmen not otherwise specified. It does not appear unreasonable, but I distinctly acknowledge it to be only conjectural. The total sum arrived at, by this calculation, seems to be strongly supported by the 'real or declared value' of the cotton exports.

"On the whole, after an attentive consideration of all the official and unofficial evidence which has been presented, I am of opinion that the annual produce of the cotton manufacture of the United Kingdom must be between 30,000,000*l.* and 34,000,000*l.*; and that the number of individuals directly employed in the manufacture, with those dependent on them for subsistence, must amount to *fifteen hundred thousand.*

"The estimates of the amount of capital invested in the cotton manufacture are attended with still greater uncertainty than estimates of the yearly produce. Mr. Kennedy, however, who is, perhaps, the best authority on this subject, is of opinion, after careful calculation, that the fixed capital employed in the spinning of cotton alone, — that is, in all the spinning machinery, mills, and other apparatus, — amounts to 7,000,000*l.*; and that the fixed capital engaged in the processes of throwing or doubling, twisting, winding, warping, dressing, weaving, bleaching, dyeing, printing, and in hosiery and lace-frames, may amount to 8,000,000*l.*; and that the floating capital, requisite to keep all the machinery in motion, and to carry on the spinning and other branches of manufacture, may be 15,000,000*l.* This would make a total of 30,000,000*l.*, and may be thus shown: —

	£
Fixed capital invested in the spinning business (including mills, machines, &c.) - - - - - - - -	7,000,000
Fixed capital invested in the preparation of the yarn, weaving, bleaching, dyeing, printing, and in hosiery and lace-frames - -	8,000,000
Floating capital employed in all the above branches - -	15,000,000
	£ 30,000,000

"In the first of these items, as in other instances, it seems to me that Mr. Kennedy errs on the side of moderation. Mr. Burn states that 17*s.* 6*d.* per spindle is the present valuation for mills and machinery in the cotton-spinning business; at which rate, as there are about 9,330,000 spindles in the United Kingdom, the whole of the mills and machinery would be worth 8,166,375*l.* A highly respectable and intelligent cotton-spinner, to whom I have submitted the question, says, after ascertaining the cost of the machinery in his own extensive works, — 'At a moderate estimate, and, certainly, considerably below the actual cost, I find that the machinery employed in spinning cotton amounts to 60*l.* for each individual employed, including water-wheels, steam-engines, shafts and gearing, straps, drums, &c. &c.; but exclusive of the money sunk in buildings, land, weirs, embankments, &c.' Now, we have estimated the mill operatives at 237,000, of whom about 57,000 are engaged in power-loom weaving; the remaining 180,000 are engaged in cotton spinning and doubling; and this number, at 60*l.* each (which excludes the buildings, land, &c.), would show the value of the spinning machinery alone to be 10,800,000*l.* That this is not too high an estimate seems probable from the statement of Mr. Holland Hoole, who says (in his 'Letter to Lord Althorp in Defence of Cotton Factories,' p. 8.) — 'A cotton factory, upon the fire-proof principle, adapted for the employment of 1,000 persons, cannot be built, filled with machinery, and furnished with steam-engines and gas works, for a less sum than 100,000*l.*' This calculation, therefore, is 100*l.* for each individual employed; if it were correct, the value of the spinning mills and machinery would be 17,200,000*l.* Amidst these widely different estimates, we shall scarcely err on the side of excess if we take the valuation given by one of my informants to the machinery alone, namely, 10,800,000*l.*, as the value of the mills and the machinery together. The capital invested in factories and machinery for power-loom weaving is estimated, by the practical gentleman already mentioned, to amount to 24*l.* for each individual employed; and, as, at least, 57,000 individuals are employed in that department, the whole capital must amount to 1,368,000*l.*: add this to the capital invested in the spinning mills, and it will make a total sum of 12,168,000*l.* On the whole, Mr. M'Culloch's estimate of the amount of capital directly employed in the manufacture, namely, 34,000,000*l.*, appears to me very moderate." — (*Hist. of Cotton Manufacture*, p. 142.)

Distribution of the Manufacture. — Lancashire was the earliest, and it still continues to be the principal, seat of the cotton manufacture; Manchester being, as it were, the head quarters of this great department of industry. Of 1,070 cotton mills, employing 182,082 individuals, reported to be at work in England in 1834, no fewer than 683 mills, employing 122,415 individuals, were situated in Lancashire; 122 mills, employing 37,200 hands, being within the single parish of Manchester! The next greatest seats of the manufacture, within the county, are Oldham, Rochdale, Bolton, Bury, Preston, Wigan, Stayley Bridge, Heap, &c. Cheshire is, next to Lancashire, the principal manufacturing district; for, though the number of mills in it (109) be less than those in the West Riding of Yorkshire (126), they are upon a much larger scale, employing 31,512 hands, while the latter only employ 10,911. The Cheshire manufacture is principally carried on at Hyde, Stockport, Bollington, and Mottram. The manufacture in the West Riding of Yorkshire is much diffused; but the greatest number of mills is in the parish of Halifax. The manufacture is, also, carried on to a considerable extent in Derbyshire, principally in the hundred of High Peak, and in Cumberland and Stafford. In Wales it is principally confined to Flintshire.

Nottinghamshire is the principal seat of two rather peculiar, but most important, branches of the cotton manufacture — that of lace and of cotton stockings. The application of the stocking frame to the lace manufacture was first attempted by a watchmaker of the name of Hammond, in 1768; but the difficulties in the way of the attempt were not completely overcome till Mr. Heathcoat made some important alterations and improvements in the machinery, for which he took out a patent in 1809. The lace, or, as it is usually called, bobbin net, produced on Mr. Heathcoat's frames, having seriously affected the manufacture of pillow lace, or lace wrought by the hand, his machines became the object of attack by the workmen; who, under the name of Luddites, maintained, for a lengthened period, a formidable combination against them. But this conspiracy being suppressed, and Mr. Heathcoat's patent having expired in 1823, and various improvements having been since effected in the manufacture, it has wonderfully increased. The beauty and cheapness of the fabric are such, that it has not only destroyed the old manufacture of pillow lace in this country, but in Belgium and France! Instead of smuggling French lace into England, English lace is now very largely smuggled into France. Mr. Felkin of Nottingham, who, besides being engaged in the trade, is advantageously known by his statistical researches, estimated the total hands employed in the bobbin net trade, in 1833, at 159,300, and the value of the manufacture at 1,850,000*l.*

The cotton stocking manufacture is principally carried on in Nottinghamshire, and partly also in Derbyshire, and to a smaller extent in some other places. The total number of frames, employed in 1833, were estimated, by Mr. Felkin, at 16,300; the stockings made at 2,830,000 dozen pairs, and their value at 880,000*l.* During the same year, there were exported 468,000 dozen pairs of stockings, supposed to be worth 257,931*l.*

Lanarkshire, and the contiguous county of Renfrew, have always been the principal seat of the Scotch cotton manufacture. Some of the fabrics made at Glasgow and Paisley are of almost unrivalled beauty and fineness. The first steam-engine for the spinning of cotton, erected in Scotland, was constructed so late as 1792. Mr. Leonard Horner, one of the Factory Inspectors, reported, in 1833, that "In Scotland there are 134 cotton mills; that, with the exception of some large establishments at Aberdeen, and one at Stanley, near Perth, the cotton manufacture is almost confined to Glasgow and the country immediately adjoining, to a distance of about 25 miles radius; and all these country mills, even including the great work at Stanley, are connected with Glasgow houses, or in the Glasgow trade. In Lanarkshire, in which Glasgow is situated, there are 74 cotton factories; in Renfrewshire, 41; in Dunbartonshire, 4; in Bute, 2; in Argyle, 2; and in Perth, 1, &c."

According to the official returns, published by the Board of Trade (vol. iv. p. 386.), there were in Scotland, in 1834, 159 cotton factories, employing, in all, 32,580 hands.

The cotton manufacture of Ireland is of very inferior importance, not merely to that of England, but even to that of Scotland. Latterly, however, it has made a rapid progress. It is principally situated in Belfast and its vicinity, or in the counties of Antrim, Down, and Armagh; but there are factories in the county of Dublin, and in other places. Contrary to the anticipations of most of those engaged in it, the increase of the manufacture has been most rapid since the repeal of what were falsely called protecting duties, laid on English cottons when imported into Ireland; the real effect of which was to make the manufacturers depend for success rather on custom-house regulations than on their own skill and enterprise. The scarcity and bad quality of Irish coal forms one of the principal obstacles to the extension of the manufacture in Ireland. Most of the coal used in Belfast is, in fact, imported from Britain. In 1834 there were in Ireland 28 cotton factories, employing 4,311 hands. In November, 1835, there were in Belfast 10 cotton mills, employing 2,550 work-people. We subjoin a

TABLE exhibiting the Number of Cotton Factories in each County of England, and in Wales, in Scotland, and in Ireland; with the Description and Amount of the Motive Force, and the Number and Ages of Persons employed. — (*Papers published by Board of Trade*, vol. iv. p. 382. &c.)

Counties.	Number of Factories.		Motive Force.						Power actually employed.	Persons employed.		
			Number of			Amount estimated according to Horse Power.				Between 8 and 12 Years.		
	At Work.	Empty.	Steam Engines.	Water Wheels.	Total.	Steam.	Water.	Total.		Males.	Females.	Total.
ENGLAND.												
Chester	109	7	170	53	223	5,055	1,266	6,321	5,598	425	406	831
Cumberland	13	-	-	-	-	-	-	-	-	8	4	12
Derby	32	-	-	-	-	-	-	-	-	87	97	184
	60	3	33	58	91	553	853	1,406	1,270	96	94	190
Durham	1											
Lancaster	683	32	714	233	947	20,302½	2,851	23,153½	21,207½	2,806	1,983	4,789
Leicester	6	-	-	-	-	-	-	-	-	9	-	9
Middlesex	7	-	-	-	-	-	-	-	-	22	-	22
Nottingham	20	-	-	-	-	-	-	-	-	17	23	40
Stafford	9	-	-	-	-	-	-	-	-	35	45	80
	4	-	3	2	5	90	60	150	134	37	33	70
York, West Riding	126	-	75	129	204	1,317	1,403	2,720	2,231½	489	387	876
Total England	1,070	42	-	-	-	-	-	-	-	4,030	3,073	7,103
Wales	5											
Scotland	159	-	-	-	-	-	-	-	-	454	538	992
Ireland	28	-	-	-	-	-	-	-	-	44	58	102
Total Empire	1,262	42	-	-	-	-	-	-	-	4,528	3,669	8,197

Counties.	Number and Ages of Persons employed.											
	Between 12 and 13 Years.			Between 13 and 18 Years.			Above 18 Years.			Total Persons.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
ENGLAND.												
Chester	1,448	1,206	2,654	3,672	4,315	7,987	9,971	10,069	20,040	15,516	15,996	31,512
Cumberland	57	38	95	169	332	501	392	658	1,050	636	1,032	1,668
Derby	261	289	550	550	998	1,548	940	2,003	2,943	1,838	3,387	5,225
	243	275	518	523	926	1,449	1,915	1,553	3,468	2,276	2,849	5,625
Durham	-	2	2	1	11	12	8	11	19	9	24	33
Lancaster	6,419	5,261	11,680	16,855	20,365	37,220	34,071	34,655	68,726	60,151	62,264	122,415
Leicester	66	17	83	130	92	222	120	158	278	325	267	592
Middlesex	24	-	24	109	14	123	62	119	181	217	133	350
Nottingham	82	131	213	132	382	514	250	706	956	481	1,242	1,723
Stafford	33	68	101	95	237	332	152	392	544	315	742	1,057
	34	45	79	106	166	272	257	313	570	434	557	991
York, West Riding	529	533	1,062	1,632	2,031	3,663	2,773	2,537	5,187	5,187	5,724	10,911
Total England	9,196	7,865	17,061	23,974	29,869	53,843	50,675	53,410	104,085	87,875	94,217	182,092
Wales	56	33	89	146	208	354	250	458	708	452	699	1,151
Scotland	1,258	1,832	3,090	2,845	7,597	10,442	6,168	12,403	18,571	10,329	22,051	32,380
Ireland	153	181	334	286	561	847	960	1,553	2,513	1,639	2,672	4,311
Total Empire	10,663	9,911	20,574	27,251	38,235	65,486	58,053	67,824	125,877	100,495	119,639	220,134

The number of work-people employed in mills, according to this table, differs a little from the number in Mr. Baines's estimate. But there are known to be sundry omissions in the table; and it is, moreover, impossible, owing to the changes that are always taking place, to form any positive conclusion as to the number of hands engaged in cotton factories at any particular period, from knowing the number engaged at some antecedent period. Latterly it has been in a state of almost unexampled progress. It appears, from a statement of Dr. Kay, assistant Poor Law Commissioner, that there were in 1835 as many factories, principally cotton, in the course of being erected, in the manufacturing districts of Lancashire and its immediate vicinity, as would require an outlay of 3,753,000*l.* of capital, employ a motive power equal to 7,507 horses, and furnish employment for no fewer than 45,042 mill hands. — (1st *Report of Poor Law Commissioners*, 1835.) These mills, Dr. Kay supposes, would be *all* constructed and at work in a year and a half or two years from July, 1835; and, though this progress was checked by the revulsion in the trade with America in 1837, that check was only of a temporary nature, and at present (1838) its influence is hardly felt.

CONDITION OF LABOURERS EMPLOYED IN COTTON FACTORIES.

Wages.—The wages of the adults engaged in factories are in general high, many of them earning from 3*s.* 6*d.* to 6*s.* 6*d.* a day, and some more. Employment in factories is also remarkably steady, not depending, like work carried on out of doors, on the state of the weather, or other uncertain contingencies, but is prosecuted almost without interruption. Hence the superior condition of the factory work-people. Such of them as are provident are in decidedly comfortable circumstances. Their money wages have somewhat declined since the peace, but they have not declined to any thing like the extent that the prices of bread, beef, clothes, and almost every necessary and useful article, have done; so that the manufacturing part of the population possess, at this moment, a greater command over the necessaries and conveniences of life, and are in decidedly more comfortable circumstances, than at any former period.

Mr. Cowell, one of the Commissioners of Factory Inquiry, obtained, when at Manchester in 1833, accurate returns from 151 of the principal mills in that town and its immediate vicinity, and in the adjoining manufacturing districts of Lancashire and Cheshire, employing 48,645 hands, specifying the departments in which they were respectively employed; the number, sex, and age of those employed in each; and the wages earned by each class during the month and week ending the 4th of May, 1833. These returns have been very carefully classified and set in different points of view by Mr. Cowell. The general results are as follows:—

TABLE distributing the 48,645 Hands into Eight different Branches or Departments of Cotton-working, and showing the Aggregate Nett Earnings of the whole Number of the Operatives in each Branch, and the Average Nett Earnings of an Operative in each for 69 Hours' Work.

Employed in	Adults.		Children under 18 Years.		Total Number employed.	Aggregate Number of Hours worked by the whole during the Month ending 4th May, 1833.	Average Number of Hours worked by each.	Aggregate Amount of their Nett Earnings, for the Month ending 4th May, 1833.	Average Weekly Nett Earnings of each Individual in each *Branch*, calculated for 69 Hours.
	Males.	Females.	Males.	Females.					
								L. *s.*	*s.* *d.*
Cleaning and spreading cotton - -	272	689	222	99	1,282	353,660·5	275·8	2,111 1 5	8 2¼
Carding - -	2,350	3,501	1,328	2,218	9,397	2,591,188·7	275·7	17,252 16 8¼	9 2¼
Mule-spinning - -	5,163	1,189	6,599	2,654	15,605	4,291,208·6	274·9	33,057 12 2¾	10 7¾
Throstle-spinning -	194	688	409	555	1,846	501,621·5	271·7	2,819 1 6¼	7 9
Reeling - - -	146	2,552	45	573	3,316	906,261·8	273·2	5,213 14 3¾	7 11¼
Weaving - -	4,627	6,108	1,631	3,674	16,040	4,400,274·7	274·3	36,080 19 11	11 3¾
Roller covering - -	61	87	6	16	170	47,268·3	278·0	414 15 7	12 1
As Engineers, Firemen, Mechanics, &c.	927	7	54	1	989	270,720·7	273·7	4,021 17 2¾	20 6
	13,740	14,821	10,294	9,780	48,645	13,362,204·8	274·6	100,971 18 11¼	Average 10 5

Table showing the Average Nett Earnings of certain Classes of Operatives employed in the Four Processes of Carding, Mule-spinning, Throstle-spinning, and Weaving.

Denomination of Process in which employed.	Class of Operatives.	Classification as respects Sex and Age.	Total Number of Persons employed.	Total Number of Hours worked by them during the Month ending May 4th, 1833.	Average Number of Hours worked by each.	Aggregate Nett Earnings for the Month ending 4th May, 1833. L. s. d.	Average Weekly Nett Earnings of each individual in each Process, calculated for 69 Hours. s. d.
Carding	Carders or Overlookers	Male adults	676	103,495·9	275·2	1,762 17 3½	23 6
	Jack-frame tenters	Principally female adults	696	190,385·0	273·5	1,103 10 3½	8 0
	Bobbin-frame tenters	Ditto ditto	945	261,650·1	276·8	1,414 3 5	7 5½
	Drawing tenters	Ditto ditto	1,931	532,287·3	275·6	2,885 3 8½	7 5½
	Overlookers	Male adults	145	40,018·6	275·9	548 2 2	29 3
Mule-spinning	Spinners	Male and female adults, but principally the former	3,797	1,046,232·0	275·5	19,454 3 5	25 8
	Piecers	Male and female adults and non-adults, but principally the latter	7,157	1,966,804·8	274·8	7,688 14 8½	5 5
	Scavengers	Male and female non-adults	1,247	340,019·1	272·6	712 2 11½	2 10½
Throstle-spinning	Overlookers	Male adults	82	22,371·9	272·8	362 14 11½	22 4½
	Spinners	Female adults and non-adults	1,123	305,712·4	272·2	1,716 17 6½	7 9
Weaving	Overlookers	Male adults	400	109,577·0	273·9	2,088 1 4	26 3½
	Warpers	Male and female adults	332	90,660·2	273·0	805 5 0	12 3
	Weavers	Male and female adults, male and female non-adults, but chiefly females	10,171	2,784,258·7	273·7	21,835 9 6½	10 10
	Dressers	Male adults	836	230,771·0	276·0	4,650 4 11	27 9½

Perhaps, however, the most complete and satisfactory statement as to the wages paid to the labourers in cotton factories, and other descriptions of work-people, in Manchester, is contained in the following table, applicable to 1832, since which there has been no material change, drawn up by the Manchester Chamber of Commerce:—

		L. s. d.		L. s. d.
Spinners, men		1 0 0	to	1 5 0
women		0 10 0	-	0 15 0
Stretchers		1 5 0	-	1 6 0
Piecers (boys and girls)		0 4 7	-	0 7 0
Scavengers		0 1 6	-	0 2 8
In the Card-room:				
Men		0 14 6	to	0 17 0
Young women		0 9 0	-	0 9 6
Children		0 6 0	-	0 7 0
Throstle-spinners		0 5 0	-	0 9 6
Reelers		0 7 0	-	0 9 0
Weavers by Power:				
Men		0 13 0	to	0 16 10
Women		0 8 0	-	0 12 0
Dressers' men		1 8 0	-	1 10 0
Winders and warpers		0 8 0	-	0 11 0
Mechanics		1 4 0	-	1 6 0
Weaving by Hand:				
Quality.	*Woven by*			
Nankeens, fancy	men	0 9 0	to	0 15 0
common	children and women	0 6 0	-	0 8 0
best	men	0 10 0	-	0 13 0
Weaving by Hand — *continued.*				
Quality.	*Woven by*			
Checks, fancy	men	0 7 0	to	0 7 6
common	children	0 6 0	-	0 7 0
Cambrics	all ages	0 6 0	-	0 6 6
Quiltings	men and wom.	0 9 0	-	0 12 0
Fustian-cutters	all ages	0 10 0	-	0 12 0
Machine-makers	men	1 6 0	-	1 10 0
Iron founders	do.	1 8 0	-	1 10 0
Dyers and dressers	do.	0 15 0	-	1 0 0
do. do.	young men	0 12 0	-	0 14 0
do. do.	boys	0 5 0	-	0 10 0
Tailors	men	0 18 0		
Porters		0 14 0	-	0 15 0
Packers		1 0 0		
Shoemakers		0 15 0	-	0 16 0
Whitesmiths		1 2 0	-	1 4 0
Sawyers		1 4 0	-	1 8 0
Carpenters		1 4 0		
Stonemasons		0 18 0	-	1 2 0
Bricklayers		0 17 0	-	1 0 0
Bricklayers' labourers		0 12 0		
Painters		0 18 0		
Slaters		0 3 8 per day.		
Plasterers		0 19 0	to	1 1 0
Spademen		0 10 0	-	0 15 0

Subjoined is an account of the prices of the principal articles of provision in Manchester from 1826 to 1832, both inclusive, also drawn up by the Chamber of Commerce:—

Articles.		1826.	1827.	1828.	1829.	1830.	1831.	1832.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef, best	per lb.	0 6½	0 6	0 6½	0 6	0 5½	0 6	
coarse	—	0 4½	0 4	0 4	0 3½	0 3	0 5½	
Bacon	—	0 7½	0 8	0 7½	0 7½	0 6½	0 7	0 7
Bread-flour	per 12 lbs.	2 5	2 5	2 7	2 9	2 7	2 6	2 4
wheaten	per lb.	- -	- -	0 1½	0 2	0 2	0 1½	0 1½
Cheese	—	0 7½	0 7½	0 8	0 6½	0 7½	0 8	0 7½
Malt	per 9 lbs.	2 1	2 4	2 2	2 2	2 1	2 4	2 2
Meal	per 10 lbs.	1 7½	1 8½	1 7½	1 5	1 6	1 6	1 3
Potatoes	per 252 lbs.	9 9	4 9	5 8	6 6	6 0	6 3	4 3
Pork	per lb.	0 6½	0 7	0 6½	0 6½	0 5	0 5½	0 5½

These authentic statements fully demonstrate that, as respects wages, the condition of the work-people employed in cotton factories is eminently prosperous. And yet every one at all familiar with the history of the factory system must be aware, that every now and then allegations are put forth of the injury done the work-people by the introduction of improved machinery; and statements without number have been published, contrasting the nearly stationary amount of their wages with the vast increase in the quantity of work they have to perform. Mr. Cowell, however, in the most important and valuable, as well as original, paper, contained in the *Reports* of the Factory Commissioners, has shown the fallacy of these representations; and has proved, by a careful and elaborate deduction, that neither has been nor can be impeached, that *improvements in machinery invariably increase, at one and the same time, the profits of the mill-owner and the wages of the workmen.* This might have been established on general grounds; but Mr. Cowell, whose diligence cannot be too highly commended, has proved, by comparing and carefully digesting returns, obtained from the wide basis already referred to, that such is, in *all cases*, the immediate effect of improvements.

Spinners are paid according to a fixed scale of prices, depending on the work done, and which decreases when the quantity of yarn they produce, in equal spaces of time, is increased. But the ratio of the decrease of price is less than that of the increase of work; so that when a workman is able, by the assistance of improved machinery, to produce, in a given time, a third or a half more yarn than previously, his wages do not fall a third or a half, but in some less proportion: so that he, as well as his master, reaps a direct and immediate advantage from the improvement of machinery; while, owing to the fall that takes place in the price of the manufactured article, the demand for it is extended, and the manufacture kept on the increase. We shall give an example of this.

In 1833, Mr. Cowell tells us, a spinner could produce, in two fine spinning mills in Manchester, 16 lbs. of yarn of the fineness of 200 hanks to the pound, from *mules* carrying from 300 to 324 spindles, working 69 hours a week; the quantity that he turned off, in 69 hours, more frequently exceeding 16 lbs. than falling short of it. Now, according to the list of prices, the spinner who produces 16 lbs. of yarn of No. 200., on *mules* of the power of from 300 to 324 spindles, is paid 3*s.* 6*d.* per pound. This gives 54*s.* for his *gross* receipts, out of which he had to pay 13*s.* for assistants, leaving 41*s.* for his nett earnings. But the power of the *mules* has since been doubled, that is, they now carry 648 spindles instead of from 300 to 324, and the same spinner produces 32 lbs. of yarn, of the fineness of 200 hanks to the pound, in 69 hours; for this he is paid at the rate of 2*s.* 5*d.* per pound (instead of 3*s.* 6*d.*). His gross receipts are, therefore, immediately raised to 77*s.* 4*d.* (32 × 2*s.* 5*d.*). He now, however, requires five assistants to help him; and, averaging their cost at 5*s.* 6*d.* each, their labour will cost him 25*s.*, or, to avoid all cavil, say 27*s.*, which, being deducted from his gross receipts, leaves 50*s.* 4*d.* for his nett wages—that is, 9*s.* 4*d.* more than he received when he only produced half the yarn.—(*Supplemental Factory Report*, D. I.)

It may be said, perhaps, that, even in this instance, the spinner "*does more work for less wages*" than before the improvement. But such is not the fact. The machine he is employed to superintend does more work in the same time than *it* did before; while the labour of the spinner remains the same, or is, perhaps, lessened. And yet, merely because he is employed to attend a more powerful and efficient machine, he gets 9*s.* 4*d.* a week, or nearly 1*s.* 7*d.* a day, of additional wages. Now, this principal holds universally; and Mr. Cowell was, therefore, justified in affirming that "a spinner earns a shilling, a pound, or a hundred pounds, in less time at present than he could have done ten years ago, and with the same or less labour; that this enhancement of his earnings has been owing to improvements of machinery; that the progress of improvements will progressively advance his earnings still higher, and, at the same time, enable a greater number of individuals to profit by the enhanced rate than actually profit by the present rate. I assert that every improvement of cotton machinery, in every department of cotton working, has hitherto had the effect of enabling 'an operative' (speaking generally of every one, in every department whatever), to earn a greater nett amount of money, in any given time, than he would have done had the improvement not taken place."

Mr. Cowell successfully employs this important principle to explain the extraordinary discrepancies that occur in the average rate of earnings in different mills in Manchester and its vicinity. It is obvious, indeed, that, without knowing the quantity of work done, or of yarn turned off in different mills, the earnings of those engaged in them cannot be compared: in mills, too, where the finest and best machinery is employed, the proportion of non-adults, or of unskilled labour, is the largest.

In the same way, Mr. Cowell has shown the nugatory nature of the statements laid before the Factory Commissioners, as to the cheapness of foreign compared with English labour. It may be true that a workman earns 30*s.* or 40*s.*, in a given time, in a mill in Manchester, and only 15*s.* or 20*s.*, in the same time, in a mill in France or Prussia. But what has this to do with the cost of labour? Arthur Young said that a labourer in Essex was cheaper at 2*s.* 6*d.* a day, than a labourer in Tipperary at 5*d.* Without knowing the *quantity of work done*, in the mills of which we know the earnings of the workmen, we have no ground whatever for affirming that the labour performed by the one who gets the least money is really the cheapest.

But, if we knew this, we have not the slightest doubt that the stories about the great cheapness of labour on the Continent would be found to be about as authentic as fairy tales. Mr. Edwin Rose, who had been practically employed as an operative engineer in different factories in France and Germany, on being examined by Mr. Cowell, stated distinctly that it took twice the number of hands to perform most kinds of factory work in France, Switzerland, &c., that it did in England; and that wages there, if estimated by the only standard good for any thing,—that is, by the *work done*,—were higher than in England! We have no doubt that this is the truth, and nothing more.

Hand-loom Weavers.—It may be right to observe that the above statements, as to the prosperous condition of the work-people engaged in the cotton trade, apply only to those employed in factories; that is, to spinners, warpers, dressers, dyers, printers, power-loom weavers, &c.; but that they do not apply to those employed out of the factories, or to the hand-loom weavers. The condition of the latter, we regret to say, has long been one of great misery and destitution. We are satisfied, however, that a great deal of misconception exists with respect to it. We doubt much, notwithstanding the currency of the opposite opinion, whether the hand-loom weavers have been materially injured by the introduction of the power-looms. Had the weavers been in a prosperous state before they were exposed to this new competition, there would have been plausible grounds, at least, for concluding that it had been mainly instrumental in sinking them into their present hopeless situation. But, in point of fact, the condition of the weavers, when the power-looms were only beginning to be talked of, was very little, if any thing, better than at present. So far back as 1808, Mr. William Radcliffe, one of the inventors of the dressing-machine, and intimately acquainted with the manufacture, was examined by the Committee of the House of Commons appointed to inquire into the claims of the Rev. Dr. Cartwright, the inventor of the power-loom, to a public reward; when he made the following statement:—"To that part of your question, whether I think the general adoption of the loom by power will operate to the prejudice of the weavers in the old way, I answer, no. In the first place, their situation, for the last twelve or eighteen months, has been such, that it cannot be made worse; as, during that time, generally speaking, they have neither been able to pay rents nor buy themselves clothes; *all their earnings have barely been sufficient to keep them alive;* and men who have families to support are obliged to work from sixteen to eighteen hours in the day to do this." Nor was this distress temporary merely. From 1808, when this striking evidence was given, down to 1818, when there were not more than 2,000 power-looms in Lancashire, the weavers were exposed to similar privations. Their wages have fluctuated since, according to the greater or less prosperity of the trade; but, a few short intervals excepted, they have always been so ruinously low, as to be altogether inadequate to support them in any thing approaching to comfort.

But it will probably be said that, how much soever the condition of the hand-loom weavers may have been depressed in 1808 or 1818, the subsequent extension of the manufacture would have insured its being very materially improved, but for the introduction of the power-looms. This, however, is a very questionable proposition. A very considerable part of the extraordinary progress of the manufacture of late years is certainly ascribable to the employment of power-looms; but, supposing Dr. Cartwright's invention had not come into the field, and that the progress of the manufacture had, notwithstanding, been equally great, still we doubt whether the situation of the weavers would have been materially different from what it now is. The truth is, that their low wages are not occasioned by the competition of the power looms, but *by the easy nature of their em-*

ployment. The following remarks of Mr. Baines seem to be quite decisive as to this point: — "The labour of the cotton-loom requires little strength, and still less skill; it may be performed by a boy or girl of 12 years old, and may be quickly learned by men who have been brought up to any other employment. It is obvious, that that which is only a child's labour can be remunerated only by a child's wages. In point of fact, women and children are continually put to the loom: weavers, who have not an opportunity of sending their children to mills, teach them to weave as soon as they are able to throw the shuttle. Thus this department of labour is greatly overstocked, and the price necessarily falls. The evil is agravated by the multitudes of Irish who have flocked into Lancashire, some of whom, having been linen weavers, naturally resort to the loom, and others learn to weave as the easiest employment they can adopt. Accustomed to a wretched mode of living in their own country, they are contented with wages that would starve an English labourer. They have, in fact, so lowered the *rate* of wages, as to drive many of the English out of the employment, and to drag down those who remain in it to their own level. It is manifest that these are reasons amply sufficient to account for the long continued and extreme depression of the hand-loom weavers: and, as they are incapable of remedy so long as the employment itself exists, the introduction of the power-loom, which must put an end to it, is to be hailed as a national blessing.

The greatest improvement, that could possibly take place, at present, in the manufacturing districts, would be the general transfer of the hand-loom weavers to the factories in the progress of being built. A transfer of this sort has occurred to some extent; but it is checked, partly by the improvement that has taken place in the wages of hand-loom weavers within the last two or three years; partly by expectations of relief founded on legislative interference; and partly by the unwillingness of the weavers to enter factories, and to submit to the strict discipline that is necessarily kept up in them. But there can be no doubt that, sooner or later, they will be driven from their business. The increased wages, they are now receiving, act as a premium upon the erection of power-looms, which not only do their work cheaper, but better. The only resourse, in fact, for the weaver is to bring up his children to other employments; and to embrace the first favourable opportunity of leaving the business himself. All attempts to interfere with the natural rate of wages, by the formation of what have been called Boards of Trade, or otherwise, are mere quackery and delusion. They might, if it were seriously attempted to carry them into practice, do much injury to the manufacture; but it is a contradiction and an absurdity to suppose that they should do any good to the weavers. *Their* only resource is to abandon their business.

Health of the Labourers employed in Cotton Factories. — This is a subject as to which there has been a great deal of misrepresentation. Children, that is, young persons between the ages of 9 and 14 years, as well as adults, are largely employed in factories; and, while the health and morals of the latter are said to suffer severely, the former have been described as being stunted in their growth, and rendered decrepid and miserable for life, by the prolonged confinement, drudgery, and ill treatment to which they are exposed. These representations of the injurious effects of what has been called *white slavery*, were at length embodied in a Report of a Committee of the House of Commons in 1832. We believe, however, that we run little risk in affirming that this report contains more false statements and exaggerated representations than any other document of the kind ever laid before the legislature. It made a great sensation; and the discussions to which it, or rather the proposal that grew out of it, for limiting factory labour to 10 hours a day, gave rise, induced government to appoint a commission to inquire, on the spot, into the actual condition of the labourers, and especially of the children, employed in factories. This commission, to whose reports we have already referred, collected a great deal of valuable and authentic information; and much light has since been thrown on the question of factory labour. It were absurd to pretend, as some have done, that the statements and representations as to its pernicious influence have been proved to be *wholly* destitute of foundation; but they have been shown to be very greatly exaggerated. That great inattention to cleanliness, and some very revolting abuses, have existed in some factories, particularly in those of the smaller class, is quite certain; but the instances of abuse bear but a small proportion to the total number; and, speaking generally, factory work-people, including non-adults, are as healthy and contented as any class of the community obliged to earn their bread in the sweat of their brow.

We do not, however, know that we should object to the total exclusion of children, from 9 to 13 years of age, from factories, provided we had any reasonable security that they would be moderately well attended to and instructed at home. But no such security is to be looked for. The parents of such children frequently want the ability, oftener the opportunity, and sometimes the wish, to keep them at home in any thing like a decent condition; to provide them with instruction, or to impress on them the importance of habits of cleanliness, sobriety, and industry. Were they turned out of the factories, few would either go to the country or to school. Four fifths of them would be thrown loose upon the streets, to acquire a taste for idleness, and to be early initiated in the vicious practices prevalent amongst the dregs of the populace in Manchester, Glasgow, Leeds, and other great towns. Whatever may be the state of society in these towns, we hesitate not to say, that *it would have been ten times worse but for the factories*. They have been their best and most important academies. Besides taking the children out of harm's way, they have imbued them with regular, orderly, and industrious habits. Their earnings are considerable, and are a material assistance to their parents; at the same time that they make them perform their tasks with a zeal and alacrity that is rarely manifested by apprentices serving without pay, merely that they may learn some art, trade, or or mystery. Many factories have also day schools, or Sunday schools, or both, attached to them, which the children attend. But, independently of this, the training they undergo in factories is of inestimable value, and is not more conducive to their own interests than to those of the public.

We subjoin some conclusive extracts as to the state of the adult and non-adult work-people employed in factories, from the valuable report of Mr. Tufnell, one of the commissioners who travelled in Lancashire:—

"Of all the common prejudices that exist with respect to factory labour, there is none more unfounded than that which ascribes to it excessive tedium and irksomeness above other occupations, owing to its being carried on in conjunction with the 'unceasing motion of the steam-engine.' In an establishment for spinning or weaving cotton, all the hard work is performed by the steam-engine, which leaves for the attendant no manual labour at all, and, literally, nothing to do in general, but at intervals to perform some delicate operation, such as joining the threads that break, taking the cops off the spindles, &c. And it is so far from being true that the labour in a factory is incessant, because the motion of the steam-engine is incessant, that the fact is, that the labour is not incessant on that very account, because it is performed in conjunction with the steam-engine. Of all manufacturing employments, those are by far the most irksome and incessant in which steam-engines are not employed; and the way to prevent an employment being incessant is to introduce a steam-engine into it. And these remarks, strange as it may appear, apply peculiarly to the labour of children in cotton factories. Three fourths of the children so employed are engaged in piecing at the mules, which, when they have receded a foot and a half or two feet from the frame, leave nothing to be done,—not even attention is required from spinner or piecer, but both stand idle for a time, which, if the spinning is fine, lasts in general three fourths of a minute or more. Consequently, in these establishments, if a child remains during twelve hours a day, for nine hours he performs no actual labour. A spinner told me that during these intervals he had read through several books. The scavengers, who have been said to be 'constantly in a state of grief, always in terror, and every moment they have to spare stretched all their length upon the floor in a state of perspiration,' I have seen idle for four minutes at a time, and certainly could not find that they ever displayed any symptoms of the condition described in this extract from the Report of the Factory Committee.

"The objections urged against the factory system, from its collecting a large number of persons together under one roof, are equally unfounded. In truth, so completely erroneous is this notion, that the complaint ought to be just the reverse,—that there are not enough large factories, and too many small ones. I invariably found that the large factories were those in which the health, general comfort, and convenience of the workmen were most attended to, and where they were the best off in every respect. And it would be an extraordinary circumstance if it were not so. When a large body of workmen are collected together under one employer, he is enabled to allow them many indulgences, at a comparatively small expense, but which would cause a serious outlay to the proprietor of a small establishment. It is the interest of a master manufacturer to do all that is in his power to accommodate his men, as he thereby is enabled to attract the best workmen into his employ, owing to the good repute which his factory will bear among them; therefore, a large establishment is certain to be best regulated, as it can be most cheaply well regulated. Accordingly, the greatest mills I always found to be the cleanest, the machinery most securely fenced off, and the hands of the neatest and most respectable appearance. In Messrs. Birley and Kirk's mill, the largest in Manchester, the workmen are allowed as much hot water as they please at tea-time, without charge, and persons are employed to take it to them. In Messrs. Strutt's mill, at Belper, each hand is allowed a pint of good tea or coffee, with sugar and milk, for one halfpenny, and medical assistance gratis: a dancing room is also found for them in this establishment. It could never answer to put up a copper to heat water for 20 or 30 persons; nor could tea or coffee be sold at this price, unless a large number were supplied with it. Mr. Ashton can afford to pay for all the surgical assistance that is yearly required by his 1,173 workmen, as he can contract for it at 6 guineas a year: did he employ only a twelfth part of that number, he assuredly could not get a surgeon to take the contract at a twelfth part of 6 guineas. Mr. Bott undertakes to attend to all the ailments of the operatives in Messrs. Lichfield's mills, on payment of a halfpenny each, weekly: he certainly would refuse to attend 20 persons for eighteenpence a week."

The notion, so generally entertained, that factory labour is unfavourable to health and longevity, has been completely disproved. Mr. Rickards, the late extremely well informed inspector for the Lancashire district, states the result of his inquiries, and of those of the surgeons having the charge of factories to be, that "*factory labour is decidedly not injurious to health or longevity, compared with other employments.*"

The stories as to the vicious morals and profligacy of the persons employed in factories, have also been shown to be without any real foundation whatever. The rectors of St. John's and St. Paul's, Manchester, the chaplain of the Manchester jail, and various dissenting clergymen, intimately acquainted with the factory population, were closely examined by Mr. Tufnell as to this point; and their evidence goes to show that the morals of the persons engaged in mills are quite as good as those of any other class of people, and that they have been materially improved—by means of Sunday schools, and otherwise—during the last 12 years. But, notwithstanding what has now been stated, we incline to think that the legislature did right in prohibiting altogether the employment of children in mills under 9 years of age. The limitation of the hours of work in factories is, however, a matter of great nicety and difficulty; and, perhaps, it would be better to arm the inspectors with powers for the prevention of abuse, than to interfere in any other way. It has, in most instances, been found quite impracticable to act on the clauses in the late act as to education; and the plan for having relays of children has also, for the most part, failed. The less, generally speaking, the cotton trade is tampered with the better. It is not indebted for any part of its rise to legislative encouragement or protection, and we hope no one may ever be able truly to affirm, that, when the legislature did interfere, its progress was retarded.

"It is worthy of remark," says Mr. Rickards, "that most of the wonderful discoveries which have raised these manufactures to their present unrivalled superiority, such as roller-spinning, the jenny, the carding-machine, the mule, &c., owe their existence to the natural genius of uneducated men, moving only in the class of common workmen or labourers;—this is their proud boast. The improvements through which they have attained their present perfection are all ascribable to the same class; whilst, I believe, it may be safely added, that every one of the great fortunes and immense establishments existing in the manufacturing districts may be traced to the minute savings of common operatives, who, from the smallest of small beginnings, have, by prudence, skill, and unremitting perseverance and industry, raised themselves, with unexampled rapidity, to a pinnacle of wealth and importance which, but for its existence, could scarcely be believed. This, then, is a state of society, with its magnificent institutions, essentially popular in its origin; its progress and present results owing little to science,—nothing to patronage,—but all to the unaided efforts of natural genius and practical experience; often obstructed, but never encouraged, by legislative enactments; and, consequently, exhibiting a striking example of the benefits of non-interference in matters where nothing is wanting but equal protection and security to insure splendid success."

SECT. IV. *Linen Manufacture.*

The linen manufacture has been prosecuted in England for a very long period, but until of late years its progress has been inconsiderable, compared, at least, with the progress made in other branches of manufacture. This seems to be partly owing to the attempts to bolster up and encourage the manufacture in Ireland, partly to the absurd restrictions that were for a lengthened period laid on the importation of foreign flax and hemp, and partly to the rapid growth of the cotton manufacture; fabrics of cotton having, to a considerable extent, superseded those of linen.

Mills for the spinning of flax were first constructed at Darlington. Previously to their introduction, about 45 years ago, the manufacture was in a very depressed state; the German and Belgian spinners being so superior to ours, that we derived the greater part of our linens from Flanders and the north of Europe; but the introduction of spinning by machinery, and the improvements that have been made in it, and in bleaching, &c., have raised us to the same level as the foreigner, and in some departments given us an advantage over him; so that, besides supplying our own markets with linen, we now export large quantities.

The manufacture is at present principally carried on in the West Riding of Yorkshire; its chief seat being in Leeds and its immediate vicinity, and in Lancashire, Dorset, Durham, and Salop. Of 16,193 individuals employed in flax mills within England and Wales, in 1835, 9,438 were in the West Riding, and of these about a half belong to Leeds and the adjacent township of Holbeck. One of the largest mills in the empire, that of Messrs. Marshall, employing from 1,100 to 1,250 hands, is in the latter. The principal flax-mills out of Leeds are situated on the Nidd and its tributary streams, in the neighbourhood of Knaresborough, Ripley, and Pateley.

Lancashire, which, after the West Riding, is the next greatest seat of the English linen manufacture, had, in 1835, 3,024 individuals employed in flax-mills. Formerly, about half the sail-cloth required for the use of the navy was manufactured at Warrington; but the manufacture has declined since the peace, though it is still carried on to a considerable extent. There is also a large manufactory of canvass at Freckleton, near Garstang. The manufacture in the other English counties is but inconsiderable.

Scotch Linen Manufacture. — The linen manufacture was long reckoned the staple branch of industry carried on in Scotland. But such were the narrow limits within which it was confined, that at the period of the Union, in 1707, its total product is not supposed to have exceeded 1,500,000 yards a year. In 1727 a board of trustees was established for the superintendence and improvement of the manufacture. It is not easy to suppose that the institution of this board could, of itself, be of any material service; but considerable bounties and premiums being, at the same time, given on the production and exportation of linen, the manufacture went on increasing; the quantity stamped for sale in 1750 having amounted to 7,572,000 yards; and, at the end of last century, to about 20,000,000 yards. Still, however, the manufacture did not increase so fast as cotton and some others, which have not received any adventitious support, until machinery began to be extensively employed in spinning, &c.; so that it is very doubtful whether the influence of the bounty has been so great as it would, at first sight, appear to have been. The regulations as to the inspection and stamping of the linen intended for exportation, after having been long objected to by those concerned, were abolished in 1822; and the bounties ceased in 1830. We subjoin

An Account of the Quantity and Value of the Linen Cloth manufactured and stamped for Sale in Scotland, during the Ten Years ending with 1822; being the latest Period to which it can be made up.

Years.	Yards.	Value.			Average Price per Yard.	Years.	Yards.	Value.			Average Price per Yard.
		£	s.	d.	d.			£	s.	d.	d.
1813	19,799,146[illegible]	977,382	1	7[illegible]	11·8	1818	31,283,100[illegible]	1,253,598	8	10[illegible]	9·6
1814	26,126,620[illegible]	1,253,574	16	10[illegible]	11·5	1819	29,334,428	1,137,923	4	11	9·4
1815	32,056,015[illegible]	1,403,766	15	2	10·5	1820	26,259,001[illegible]	1,038,708	18	5[illegible]	9·4
1816	26,112,045[illegible]	1,026,674	1	11[illegible]	9·4	1821	30,473,461[illegible]	1,232,038	15	4[illegible]	9·7
1817	28,784,967[illegible]	1,092,689	2	8[illegible]	9·1	1822	36,268,530[illegible]	1,396,296	19	11[illegible]	9·2

This account, which extends as far back as 1728, is not, however, of any use, as affording any certain test of the progress or total value of the manufacture. The stamp was only affixed to linen on which a bounty was paid; that is, on *linen intended for exportation.* Linen manufactured for home use, or intended for private sale, was not stamped. Since 1822 all the branches of the manufacture have made an astonishing progress.

Dundee is the chief seat of the Scotch, and, indeed, of the British, linen manufacture. The business seems to have been introduced into it early last century; but for a lengthened time it was quite inconsiderable. In 1745 only 74 tons of flax were imported. From that period to 1791 the progress of the manufacture was more rapid: in the latter year 2,444 tons of flax and 299 tons of hemp being imported, and about 8,000,000 yards of linen, sail-cloth, &c., exported. Previously to this period all the yarn used in the manufacture was spun upon the common hand-wheel, partly in the town and partly in the adjacent country; but the spinning of yarn by machinery began soon after to be introduced; and the increased facility of production, consequent to the erection of flax-mills, has been such, that the cost of the yarn, including, of course, the raw material, is now less than the mere expense of spinning amounted to 30 years ago! The result has been the total cessation of hand-spinning in all parts of Scotland, and a wonderful increase of the quantity of yarn produced, and of the manufacture. In 1811 4 spinning-mills had been constructed in Dundee. In 1831 the number was increased to 31, employing 2,065 spinners and 405 flax-dressers, exclusive of several mills erected at Lochee, a suburb of Dundee, and at other places in the vicinity. During the last 4 years the number of mills has been considerably increased, and several new ones are now in progress. The yarn is generally bleached before it is woven. The goods produced consist of imitation Russia sheeting, Osnaburgs, sail-cloth, cotton and coffee bagging, &c. They are partly woven in Dundee, and partly in the adjacent towns of Arbroath, Forfar, Montrose, &c.; but the business in most of these towns is carried on on account of the manufacturers of Dundee, and by their capital; the goods being all brought to it as to their grand depôt and market. We subjoin an account of the imports of flax, hemp, &c. into Dundee, and of the exports of linen, sail-cloth, &c. from the same, during the 5 years ending 31st of May, 1835.

IMPORTS.

Articles.	1831.	1832.	1833.	1834.	1835.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Flax - -	14,607	10,907	16,040	18,096	12,141
Flax, Codilla -	3,907	4,103	2,737	4,868	6,497
Hemp - -	2,179	1,607	2,875	2,453	5,397
Hemp, Codilla -	1,566	1,475	505	748	1,124
Totals -	22,259	18,092	22,157	26,165	25,159

EXPORTS.

Linens.	1831.	1832.	1833.	1834.	1835.
	Pieces.	*Pieces.*	*Pieces.*	*Pieces.*	*Pieces.*
Osnaburgs -	96,957	8,750	100,713	122,191	139.450
Sheetings - -	131,660	143,250	148,377	164,730	165,959
Cotton Bagging	65,592	49,036	27,179	30,521	80,158
Sundries - -	7,395	13,163	16,793	13,357	12,511
Sail-cloth - -	72,268	85,522	81,754	106,677	103,010
Sacking - -	45,893	47,948	57,242	67,749	57,177
Dowlas - -	40,915	68,448	69,774	52,644	46,733
Sundries - -	11,550	9,601	13,374	13,048	13,709
Totals -	474,230	428,718	515,206	570,917	618,707

The exports during the year ended 31st of May, 1835, amounted, in all, to between 60,000,000 and 70,000,000 yards, worth about from 1,550,000*l.* to 1,600,000*l.*, being considerably greater than the entire exports from Ireland.*

The machinery used at Dundee is all moved by steam power, and there is a considerable deficiency of water. Several projects are now on foot for diverting some of the adjacent streams into or near the town; and there is but little doubt that this signal improvement will speedily be effected.

It is stated, in the returns as to Forfarshire, under the last census, that there are engaged in the linen manufacture, at Dundee 3,300 males, of 20 years of age and upwards; at Arbroath 1,200; at Forfar nearly 900; at Kirriemuir nearly 600; at Brechin upwards of 400; and at Liff upwards of 320.

Besides the district of which Dundee is the emporium, embracing the counties of Angus and Perth, with the northern part of Fifeshire and the southern part of Kincardineshire, the manufacture is carried on to a considerable extent in other parts of the country. At Aberdeen are some of the largest flax-mills in the empire; and these, with the businesses of bleaching, weaving, &c., dependent upon them, are supposed to afford employment to about 4,000 persons.

Dunfermline is the principal seat of the manufacture of the finer sorts of linen fabrics; such as fine and common shirting, damasks, and table linen, &c. The yarn is spun by machinery, and the weaving is executed by the hand, mostly in the town, but partly in the adjacent towns of Kirkcaldy, Dysart, &c. Within these few years the beauty of the patterns, and the fineness of the goods, have been much improved, and the manufacture much extended. It is stated, in the official returns obtained under the census of 1831, that 2,700 males, of 20 years and upwards, were employed in the parish of Dunfermline, principally in the weaving of damasks. In the parish of Dysart nearly 700 are employed in various departments of the manufacture. The total number of males of the above age, employed in the manufacture in the county of Fife, being about 7,500.

It is believed that the first articles of the Scotch linen manufacture that made their way to foreign countries were produced in Paisley; but, after attaining, in some departments, to great excellence, the linen trade in that town began gradually to decline, and has been nearly superseded by that of cotton and silk.

According to the statements furnished by the Factory Inspectors, there were in Scotland, in 1834, 170 flax-mills in full operation, employing, in all, 13,409 hands.

Irish Linen Manufacture. — We have previously noticed the unjustifiable proceedings of the English parliament in 1698, when the two houses addressed William III., stating that it would be for the public advantage were the woollen manufacture of Ireland discouraged, and the linen manufacture established in its stead! — (*Antè*, p. 56.) This recommendation was carried into full effect. The woollen trade, in which the Irish had made some progress, was entirely crushed. But, though it be impossible either to palliate or excuse conduct so illiberal and unjust, it is but fair to say that the parliament of England has always discovered the greatest readiness to encourage the linen manufacture of Ireland, and zealously co-operated with the Irish parliament in that view. All the expensive and cumbrous machinery of premiums, regulations, bounties, and so forth, was put in motion; and, had it been possible to establish a manufacture on a solid foundation by such means, they might have been expected to succeed in this instance. In 1711 a board of trustees was appointed to watch over the progress of the manufacture; to distribute the large sum annually given by parliament for premiums; and to provide for the prevention of frauds in the manufacture, and for other purposes. Under the superintendence of this board, public halls were erected in Dublin, Belfast, and Newry, for the accommodation of the linen factors and others engaged in the trade; regulations were established as to the manufacture and sale of linen; and officers were appointed in different districts to see that these regulations were complied with. A more solid encouragement was given by the granting of bounties on the exportation of Irish linen in 1743. Efforts were also made to encourage the growth of flax-seed; and, in imitation of the English policy of making dead bodies be buried in woollen shrouds, the use of linen scarfs and hatbands at funerals was introduced!

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* The progress of Dundee has been quite astonishing. There are persons, now living in the town, who farmed the harbour dues at 400*l.* a year, whereas they now produce about 12,000*l.* !

In consequence of this extraordinary encouragement, the linen manufacture was gradually extended, particularly in the northern part of the island. But it may be questioned whether its extension has been advantageous. Mr. Young and Mr. Wakefield, two very high authorities as to all that respects Ireland, contend that it has been prejudicial rather than otherwise; and we are inclined to think that they are right. It certainly contributed to that morbid increase of population, and that minute division of the land, which are the bane of Ireland, and which are carried to the greatest extent where the manufacture is most diffused. The manufacturers, too, being not only spinners and weavers, but also little farmers, had their attention diverted from their proper business, and were neither sufficiently industrious nor inventive. As might be expected, their earnings were generally very low, and but few amongst them were ever able to emerge to a more elevated sphere.

The introduction of mill-spinning has already gone far to effect a total change in the old mode of conducting the manufacture. The low wages of spinners in Ireland, and the system on which the manufacture had been long conducted, hindered the erection of flax-mills in that country, many years after they had been extensively introduced into England and Scotland. But the rapid progress of the manufacture in the latter, subsequent to the erection of these mills, made it evident that, unless similar machinery were set in motion in Ireland, the linen manufacture in it would be entirely annihilated. At length, notwithstanding the obstacles in the way, mills were introduced, and, in consequence, spinning by the hand, though it still keeps its ground in some districts, is already nearly unknown in others; and the manufacture has disappeared from several parts of the country, where it had been largely introduced, leaving those who had been partially dependent on it for subsistence in a very depressed state. On the whole, however, there can be no doubt that the gradual introduction of the factory system will be, in the end, most advantageous. Belfast is the principal seat of the new, as it was of the old, system. In October, 1835, 12 flax-mills, employing 2,575 hands, were at work in that thriving town, and one in the course of being erected. — (*Private Information.*) According to the official returns, there were in Ireland, in 1834, 25 flax-mills, employing, in all, 3,681 hands.

The regulations relating to the stamping of linen, its sale in the public markets, and most of those that had reference to the details of the manufacture, have been repealed, with advantage to all parties.

Imports of Flax. — Exclusive of the flax raised at home, we import large quantities from foreign countries. Of these, Russia supplies us with by far the largest share. In 1834 we imported, in all, 811,722 cwts., of which there were brought from Russia 562,815, Prussia 103,940, Holland 81,157, Belgium 39,426, New Holland 4,997, &c.

Exports of Linen from Ireland, &c. — The following table, which we regret the parliamentary accounts do not furnish the means of continuing to the present day, gives an account of the quantity of linens exported from Ireland from 1800 to 1829, both inclusive; and of the bounty paid on linen exported to foreign parts from Ireland.

Years.	Exported to Great Britain.	Exported to Foreign Parts.	Total.	Amount of Bounty paid in Ireland on Linen exported to Foreign Parts. £	s.	d.
	Yards.	*Yards.*	*Yards.*	£	s.	d.
1800	31,978,039	2,585,829	34,563,868			
1802	33,246,943	2,368,911	35,615,854			
1804	39,837,101	3,303,528	43,140,629	10,545	2	2
1806	35,245,280	3,880,961	39,126,241	15,668	4	6
1808	41,958,719	2,033,367	43,992,086	6,740	16	0
1810	32,584,545	4,313,725	36,898,270	16,448	19	9
1812	33,320,767	2,524,686	35,845,453	11,548	3	4
1814	39,539,443	3,463,783	43,003,226	17,231	14	11
1815	37,986,359	5,496,206	43,482,565	17,430	17	3
1816	42,330,118	3,399,511	45,729,629	12,082	6	4
1817	50,288,842	5,941,733	56,230,575	21,524	15	4¼
1818	44,746,354	6,178,954	50,925,308	28,848	6	2
1819	34,957,396	2,683,855	37,641,251	16,177	8	3½
1820	40.318,270	3,294,948	43,613,218	14,928	9	11
1821	45,519,509	4,011,630	49,531,139	18,218	19	2¾
1822	43,226,710	3,374,993	46,601,703	17,112	9	2
1823	48,066,591	3,169,006	51,235,597	17,765	5	10
1824	46,466,950	3,026,427	49,493,377	17,114	13	10½
1825	52,559,678	2,553,587	55,113,265	12,015	9	6½
1826	The exportation to Great Britain cannot be ascertained for these years, the cross-channel trade having been assimilated by law to a coasting traffic.	2,726,297	- -	10,249	17	9
1827		4,284,566	- -	12,114	0	8
1828		3,214,911	- -	9,494	7	5
1829		2,386,223	- -	6,886	1	11

Of these exports, more than twelve thirteenths have been to Great Britain. The total average export, during the three years ending with 1825, was 51,947,413 yards, of which 49,031,073 came to this country: the exports to all other parts being only 2,916,340. Since 1825, the trade between Ireland and Great Britain has been placed on the footing of a coasting-trade, so that linens are exported and imported without any specific entry at the custom-house.

Bounties. — Besides premiums and encouragements of various kinds, bounties were granted on the exportation of linen, for a very long period, down to 1830. In 1829, for example, notwithstanding it had then been very much reduced, the bounty amounted to about 300,000*l.*, or to nearly *one seventh part* of the entire real or declared value of the linen exported that year! It is not easy to imagine a greater abuse. A bounty of this sort, instead of promoting the manufacture,

Account of the Quantity and Value of Linen manufactured Goods exported from the United Kingdom in 1836 and 1837; specifying the Countries to which they were exported, and the Quantity and Value sent to each.

Countries to which exported.	1836.					1837.				
	Linen Manufactures.			Linen Yarn.		Linen Manufactures.			Linen Yarn.	
	Entered by the Yard.		Thread, Tapes, and Small Wares.			Entered by the Yard.		Thread, Tapes, and Small Wares.		
	Quantity.	Declared Value.	Declared Value.	Quantity.	Declared Value.	Quantity.	Declared Value.	Declared Value.	Quantity.	Declared Value.
	Yards.	*L.*	*L.*	*Lbs.*	*L.*	*Yards.*	*L.*	*L.*	*Lbs.*	*L.*
Russia	4,477	378	59	1,840	143	9,070	1,013	64	3,082	219
Sweden	1,783	37	11	700	60	2,780	104	-	2,055	267
Norway	30,635	1,237	370	192	6	11,538	602	968	820	62
Denmark	12,615	798	-	8	1	13,889	778	5	—	—
Prussia	—	—	—	—	—	—	—	—	—	—
Germany	191,728	17,408	7,027	316,784	26,210	205,028	16,332	6,978	320,039	25,010
Holland	75,172	4,917	1,158	124,476	7,839	86,013	4,102	1,878	324,746	19,406
Belgium	126,475	11,403	238	58,082	3,520	85,927	8,200	479	388,505	26,274
France	1,998,158	118,666	722	4,012,141	276,942	3,368,388	142,812	1,786	7,010,983	401,007
Portugal, Azores, and Madeira	659,941	23,275	14	-	-	1,164,264	31,157	12	—	—
Spain and the Canaries	6,264,619	209,581	155	151	69	4,475,063	157,139	1,327	934	96
Gibraltar	889,149	27,574	40	200	20	1,023,806	30,595	487	—	—
Italy	611,255	45,814	761	55,438	3,612	442,029	33,774	24	92,818	5,940
Malta	30,165	1,567	207	-	-	61,659	2,722	145	—	—
Ionian Islands	22,636	1,307	133	-	-	24,224	1,415	308	—	—
Turkey and Continental Greece	66,858	4,821	-	-	-	106,354	5,629	10	—	—
Morea and Greek Islands	7,37	30	-	-	-	4,677	187	12	—	—
Cape of Good Hope	662,874	24,814	1,483	-	-	300,510	13,132	852	—	—
Other Parts of Africa	302,198	14,616	270	-	-	376,412	14,948	1	—	—
East Indies and China	804,435	44,165	874	-	-	774,843	34,894	631	—	—
New South Wales, Van Diemen's Land, and Swan River	834,161	34,363	1,536	-	-	1,023,839	43,098	626	-	—
British North American Colonies	2,897,031	107,504	13,264	-	-	2,367,428	88,017	8,459	[illegible]95	338
——— West Indies	11,226,000	401,463	3,378	2,011	205	12,391,446	370,144	4,499	2,[illegible]00	170
Foreign W. Indies	3,980,024	140,095	5,324	-	-	4,531,470	125,653	9,316	—	—
United States of America	39,937,620	1,639,343	48,534	2,425	135	13,495,453	562,779	21,818	18,983	1,190
Mexico	691,538	17,153	34	-	-	1,628,738	65,872	30	—	—
Guatemala	—	—	—	—	—	—	—	—	—	—
Columbia	1,457,498	35,205	73	-	-	1,205,586	26,318	165	—	—
Brazil	5,686,997	193,997	1,924	-	-	4,655,711	121,142	1,657	—	—
States of the Rio de la Plata	794,772	27,844	460	-	-	1,477,392	42,691	656	—	—
Chili	826,899	39,277	30	-	-	1,337,167	48,751	330	—	—
Peru	719,715	32,306	-	-	-	1,462,552	53,629	445	—	—
Isles of Guernsey, Jersey, Alderney, and Man	280,595	17,073	215	56	10	313,076	15,866	153	2,240	28
Total	82,088,760	3,238,031	88,294	4,574,504	318,772	58,426,333	2,063,425	64,020	8,373,100	479,307

rendered those engaged in it comparatively indifferent to improvements; and, though it had been otherwise, what is to be thought of the policy of persisting for about a century in supplying the foreigner with linens for less than they cost? We have not the least doubt that were the various sums, expended in well-meant but useless attempts to force this manufacture, added together, with their accumulations at simple interest merely, they would be found sufficient to yield an annual revenue little, if at all, inferior to the entire value of the linens we now send abroad. And, after all, the business never began to do any real good, or to take firm root, till the manufacture ceased to be a domestic one, and was carried on principally in mills, and by the aid of machinery,—a change which the old forcing system tended to counteract. The only real and effectual legislative encouragement the manufacture has ever met with has been the reduction of the duties on flax and hemp, and the relinquishing of the absurd attempts to force their growth at home.—(*Commercial Dictionary, art.* LINEN.)

Value of the Manufacture.—Number of Persons employed.—There are no means by which to form an accurate estimate of the entire value of the linen manufacture of Great Britain and Ireland. Dr. Colquhoun estimated it at 15,000,000*l.*; but there cannot be the shadow of a doubt that this is an absurd exaggeration. In the first edition of the *Commercial Dictionary* we expressed our conviction that it could not be valued at more than 10,000,000*l.*; but further investigation has satisfied us that even this estimate was beyond the mark, and that the entire produce of the manufacture in the United Kingdom does not exceed 8,000,000*l.*[*] Some very intelligent individuals, largely engaged in the trade, do not estimate it at so much; and we feel pretty confident that this sum, if not much beyond, is at all events not within the mark. Now, if we set aside a third part of this sum for the value of the raw material, and 25 per cent. for profits, wages of superintendence, wear and tear of capital, coal, &c., we shall have 3,334,000*l.* to be divided as wages among those employed in the manufacture. And, supposing each individual to earn, at an average, 18*l.* a year, the total number employed would be about 185,000. It may be thought, perhaps, that 18*l.* is too low an estimate for wages; and such, no doubt, would be the case, were not Ireland taken into the average. But, as a great many persons are there employed in the manufacture at very low wages, we believe that 18*l.* is not very far from the mean rate.[†]

Proportion of Males and Females employed, Wages, &c.—It appears from the subjoined tables, drawn up by Dr. Mitchell from returns obtained by the Commissioners of Factory Inquiry, that the proportion of males employed in the flax-mills at Leeds is to females as 1 to 1½, or as 2 to 3, while in Scotland the proportion is as 2 to 5. As was to be anticipated, wages are considerably higher in Leeds than in Scotland.

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[*] Sir F. M. Eden estimated the entire value of the linen produced in Great Britain, in 1800, at 2,000,000*l.*—(*Treatise on Insurance*, p. 76.)

[†] A vast number of persons in Ireland are only partially engaged in the manufacture; but we suppose the 185,000 individuals to be constantly engaged in it.

TABLES specifying the Number of Males and the Number of Females, classified according to their Ages, employed in certain Flax Mills at Leeds and at Dundee, with the Rates of Wages paid to each Class of Individuals in each Place.

Leeds.					Dundee.				
	Males.		Females.			Males.		Females.	
Age.	Number employed.	Average weekly Wages.	Number employed.	Average weekly Wages	Age.	Number employed.	Average weekly Wages.	Number employed.	Average weekly Wages.
		s. d.		s. d.			s. d.		s. d.
Below 11	54	2 10½	45	2 9½	Below 11	148	2 9½	178	2 1
From 11 to 16	416	4 1	634	4 0	From 11 to 16	776	3 10½	1,433	3 10¾
— 16 - 21	134	9 11½	596	5 9¾	— 16 - 21	216	7 6	1,742	5 6¾
— 21 - 26	70	17 1½	184	6 4¾	— 21 - 26	121	13 0½	918	6 0¾
— 26 - 31	74	19 1	57	6 2	— 26 - 31	156	14 7	440	5 7¾
— 31 - 36	63	19 2¼	14	6 2¼	— 31 - 36	148	15 8¼	144	5 4¾
— 36 - 41	66	18 2	9	6 3	— 36 - 41	131	14 5¾	145	5 2¼
— 41 - 46	64	19 5¼	6	6 0	— 41 - 46	115	14 2	52	5 1¾
— 46 - 51	37	19 7¾	4	6 2	— 46 - 51	102	13 10¾	36	5 9¾
— 51 - 56	35	18 3¾	1	6 0	— 51 - 56	51	14 8¼	31	6 0
— 56 - 61	22	17 7	2	6 0	— 56 - 61	48	15 11¾	14	6 8
— 61 - 66	8	14 9			— 61 - 66	22	9 1¼	5	4 8½
— 66 - 71	11	13 6¾			— 66 - 71	13	8 10¾	6	3 11
— 71 - 76	6	16 1¼			— 71 - 76	4	10 4	1	4 6
— 76 - 81	2	10 0			— 76 - 81	2	8 1½	1	5 0
					— 81 - 86				
	1,052		1,552			2,053		5,146	

Health of People employed in Flax Mills.—It appears to be the concurrent opinion of Messrs. Stuart, Drinkwater, and Power, Factory Commissioners, that employment in flax-mills is, speaking generally, more injurious to the health than in any other class of factories. We have little doubt that this conclusion is well founded. The heckling department, in which children are largely employed, requires constant attention on their part, and also pretty considerable exertion. A great deal of dust is, at the same time, always flying about, which cannot fail to be very prejudicial to the health. In the spinning department, the roving, out of which the thread is formed, is made to pass through either hot or cold water; and there is, in consequence, a continual spray from the yarn and the machinery, which is not long in wetting the clothes to the skin. Perhaps the best way to avoid the serious injury arising from this cause would be the use of waterproof aprons. These have, indeed, been already introduced into one or two mills, and found to answer exceedingly well.

SECT. V.—*Silk Manufacture.*

The silk manufacture seems to have been introduced into England so early as the 14th century. The throwsters of the metropolis were formed into a fellowship in 1562; but they were not incorporated till 1629. It is stated, in the preamble to a statute passed in 1666 (13 & 14 Charles 2. c. 15.), that there were then no fewer than 40,000 individuals engaged in the trade! We incline, however, to think that there is no little exaggeration in this statement; and we refer to it only as showing that the manufacture was then firmly established, and of considerable importance. It received a powerful stimulus by the immigration of Protestants from France, subsequently to the revocation of the Edict of Nantes, in 1685. Unluckily, however, an end was soon after put to the importation of foreign silks, which had previously been carried on to a considerable extent. This prohibition had the effect that might have been anticipated: the manufacturers trusted, in future, rather to custom-house regulations than to their own skill and ingenuity for the disposal of their goods; routine usurped the place of invention; and from this distant period, down to the adoption of the new system, in 1825, but few improvements were made in the processes.

In 1719, the first mill for throwing silk was erected at Derby by the famous Sir Thomas Lombe, who had made himself acquainted with the mechanism in Italy, and who, at the expiration of his patent, received a parliamentary reward of 14,000*l.*, in consideration of his great public services. But it is more than doubtful whether the construction of this mill was of any advantage to the manufacture, inasmuch as exorbitant duties were imposed on foreign-thrown silk, in order to bolster up the new business at home.

For more than a century from this period, the history of the silk manufacture presents little else than a continuous series of complaints on the part of the manufacturers of the decay of their trade, arising from the clandestine importation of foreign silks, and of impotent efforts on the part of government to effect their exclusion. In consequence of this miserable system, the energies of the manufacturer were paralysed; and, notwithstanding the astonishing progress in all other manufactures, and our superiority in all other sorts of machinery, such is the deadening influence of monopoly, that the machinery we employed in the silk-trade in 1825 was most decidedly inferior to that of either France or Germany; which, indeed, were superior to us not in this only, but in every department of the trade.

Mr. Huskisson had sagacity to perceive the cause of this inferiority, and courage to undertake the introduction of a new system. This was accomplished in 1825, by reducing the duties on raw silk to a nearly nominal amount, and materially diminishing those on thrown or organzine silk; while, at the same time, the prohibition against importing foreign silk goods was repealed, and they were allowed to be freely imported on paying an *ad valorem* duty of 30 per cent. This change of system was violently opposed; and many predicted that it would occasion the ruin of the manufacture. But these sinister auguries have been proved to be wholly fallacious. The measure, in fact, has been signally successful. The manufacturers, feeling they could no longer depend on the wretched resource of custom-house regulations, put forth all their energies; and, having called the various resources of science and of ingenuity to their aid, the manufacture has been more improved and extended during the last ten years than it had been during the previous century; and we now export several descriptions of silk goods, even to France herself!

Value of the Manufacture. — *People employed,* &c. — From the many difficulties in the way of arriving at any thing like a correct conclusion as to the value of our silk manufacture, chiefly arising from the numerous articles into which silk enters, either in whole or as a component part, and also from being so widely spread over the United Kingdom, any estimate which may be formed upon the subject cannot be more than a rude approximation. To distribute the material among the different branches of the trade, to apportion the value of the manufacture under the heads of *labour, wear and tear, interest on capital, &c., and manufacturers' profit,* and to estimate *the number of persons employed,* seems, therefore, almost a hopeless task; but the accompanying table is, notwithstanding, submitted to the reader. It has been drawn up with great care from the statements of intelligent practical men in all parts of the country conversant with the trade, and well able to form an opinion upon it. We believe that it approximates as closely to correctness as can be expected in an inquiry of this kind.

Broad Silks. — Under this denomination is comprehended all manufactured goods of entire silk *sold by the yard,* viz. gauzes, Persians, sarsnets, gros de Naples, satins, velvets, damasks, and in general all broad silks, plain or figured, manufactured at Spitalfields, Manchester, Macclesfield, Glasgow, Paisley, Dublin, and all other places in the United Kingdom.

It is believed that in this branch nearly a half of the whole imported silk is consumed; and that the gross value of the trade may be thus estimated: —

	£
Spitalfields - - -	1,800,000
Manchester - - -	1,500,000
All other places - - -	500,000

ESTIMATE of the total Value of the Silk Manufacture of Great Britain (entire and mixed) for 1836, showing the different Items of which the same is made up, the Number of Persons employed, &c.

Branches.	Estimated Weight of Raw Silk consumed.	Cost to Manufacturer, including throwing and Waste.	Cost of Dyeing.	Estimated Amount paid for winding, warping, weaving, printing, finishing, &c.	Estimated Number of Persons employed.	Interest on Capital, Wear and Tear of Machinery, Risk, incidental Charges, and Manufacturer's Profit.	Estimated total Value.
	lbs.	*L.*	*L.*	*L.*	*No.*	*s.*	*L.*
Broad silks - - - -	1,800,000	1,845,000	135,000	1,156,500	55,605	627,300	3,763,800
Ribands - - - -	750,000	768,750	56,250	577,500	27,765	280,500	1,683,000
Handkerchiefs - - - -	350,000	262,500	26,250	202,125	9,718	98,175	389,050
Crapes - - - -	160,000	140,833	12,000	76,417	7,350	80,238	309,488
Silk hose and gloves - - -	180,000	162,000	16,000	139,000	6,683	47,550	364,550
Sewing silks - - -	200,000	152,000	15,000	41,000	1,970	41,600	249,600
Mixed goods - - - -	800,000	600,000	60,000	900,000	49,452	936,000	2,495,000
Miscellaneous - - -	100,000	93,958	7,500	304,374	16,726	243,500	649,332
	4,340,000	4,025,041	328,000				
Deduct from dyeing one third for labour at 10s. per week, and one third for profit, &c. - - - -	- -	- -	218,666	109,333	4,905	109,333	
			109,334	3,506,249	179,472	2,464,196	10,104,820
From the government returns, just published, there appear to be employed in silk factories 10,188 males and 20,494 females, from which deduct for crapes 1,350 persons, and sewings 1,500 persons, engaged in throwing - - - -			- -	- -	27,832		
Producing, at 3s. per week average wages - - -			- -	217,090	- -	161,335	378,425
Total amount paid for wages - - - - -			- -	3,723,339			
Total number employed - - - -			- -	- -	207,304		
Interest on capital, wear and tear, profit, &c. - -			- -	- -	- -	2,625,531	
Estimated total value - - - -			- -	- -	- -	- -	10,483,245
Estimated silk consumed - - -		4,340,000					
Deduct Italian thrown - - -		195,750					
		4,144,250 lbs.					
Total value of throwing, at 2s. per lb. - -		414,425*l.*					

From a series of shipments in spring 1835, it appears that in a gross total of 2,273 lbs. (almost exclusively gros de Naples), taken at the first cost, or manufacturer's price, the average value per lb. was 40*s.*

Velvets at the same period in a weight of 132½ lbs. of inferior qualities showed an average value of 58*s.* 4*d.*; while gauzes produced 212*s.* per lb. The proportion of the two last classes of goods is small compared with the first; but by far the greater proportion of manufactured silks exported *are low-priced and inferior goods*, considerably under the average of silks usually in demand for home consumption. It may fairly be presumed that the value of the whole broad silks manufactured would show an average of from 48*s.* to 50*s.* per lb. The richer qualities of plain and figured silks, satins, velvets, &c. (principally sold among the higher classes) are *not exported at all*, the drawback of 3*s.* 6*d.* per lb. offering the greater inducement to the exporter in proportion as the value of the goods is small. At an average of 49*s.* per lb., and making allowance for the loss of weight incurred in boiling, the value of this branch is about the amount estimated.

The average of 20*s.* 6*d.* per lb. as the price of thrown silk, in 1834, is taken with respect to Bengal, China, Turkey, Persia, and Italian raw. The average of the whole thrown silk for that year was 18*s.* 9½*d.*; but, in this particular branch of the trade, Italian thrown and foreign and home waste are excluded, the proportions used of these kinds being comparatively small.

There are no means of arriving at a satisfactory estimate of the loss incurred in weight by boiling, preparatory to dyeing the silk. It is said that the material loses 25 per cent. of its weight by that process; but this loss is, to a certain extent, compensated by the additional weight received by dyeing. In light colours that addition is comparatively small; but in blacks and heavy colours it is sometimes even equal to the weight lost in boiling. On dark colours generally, it is believed that at an average the deficiency may be compensated within 7½ per cent. of the original weight of the silk; but, when it is considered that a certain portion of the material is not boiled at all, and that a practice is often resorted to to give an undue weight to the manufactured silk by prepared dyes, the average of 15 per cent. loss is believed to be nearly correct.

The cost of dyeing has been variously estimated, but it is supposed that 1*s.* 6*d.* per lb. is a fair average price. — (See Comparative Lists of Prices of Dyeing in England and France, *Silk Report*, p. 300.)

From the evidence of several manufacturers before the Select Committee on the Silk Trade, it appears that the labour amounts to about 70 per cent. on the thrown silk. Assuming this estimate to be correct, and that the average wages of the individuals employed as winders, warpers, weavers, &c. &c. may amount to 8*s.* per week, there would appear to be 55,000 persons *directly engaged* in this branch. This average is taken subject to all deductions, and is believed to be nearly the truth. Some few weavers may earn 20*s.* and upwards per week (but the average of whose wages, in 1831, was 9*s.* 9*d.* in Spitalfields — see *Ballance's Evidence*); the winders, however, being principally children or females, derive but a small pittance (from 2*s.* to 3*s.*) for their labour; and form, perhaps, one eighth of the whole number employed.

The amount estimated of 20 per cent., to cover the interest on capital employed, wear and tear of machinery, incidental charges, risk, and manufacturers' profit, may be liable to some question; but a point of this delicate nature must at least be matter of opinion. From the great competition which exists in the trade, there is considerable doubt whether this can be realised; and it is therefore assumed, rather as a compensation which the manufacturer *ought at least to receive*, than as indicating any fixed or certain remuneration. There is too much reason to fear (from the number who have left the trade) that the manufacturers are content with a much less per-centage on their outlay. The trade being much divided, and in many instances, particularly in Spitalfields, in the hands of small manufacturers, reduced profits are the necessary consequence of increased competition; and under such circumstances it is evident that he who produces the greatest quantity is the most successful competitor, and smaller manufacturers (whose expenses, risks, &c. are greater in proportion) must submit to the powerful influence which is opposed to them. This is augmented also by the rivalry which exists between the two great manufacturing districts of Spitalfields and Manchester. In Scotland and Ireland the broad silks produced (except gauzes, which are chiefly manufactured at Paisley and Glasgow for the English markets) are in general carried off by the demand in these places. The competition of the English markets at present presses upon the yet infant manufacture of Scotland in broad silks; but the manufacture there would seem to be on the advance.

Ribands. — The consumption of silk in the riband trade has been estimated at 600,000 lbs. for Coventry and its neighbourhood alone; but a large amount is manufactured at Congleton, Macclesfield, Leek, Derby, Spitalfields, and other places, consisting of black sarsnets, galloons, doubles, and Italians (almost wholly by power) which is estimated to consume about, perhaps, 150,000 lbs. more. This estimate is adopted for 1834; but it is believed to be rather under the actual consumption in the riband trade at this time, which is supposed to be 800,000 lbs. at least.

The price per lb. of the silk, loss by boiling, and expense of dyeing, are taken at the same rates as in broad silks; but it must be considered that, on a very great proportion of the weight set aside for galloons, &c., no loss whatever is sustained, as the silk does not undergo the process of boiling, an addition of 12½ per cent. being even added in some articles to the weight by dyeing. The quantity of light colours, however, in the fancy trade, and the loss of weight incurred by clipping gauzes, cuttings, &c., may bring the actual deficiency in weight manufactured to about the amount estimated.

With respect to the amount paid for labour, several most competent witnesses agree in estimating it at about 70 per cent. on the dyed silk. (See evidence of Messrs. Brunskill and R. S. Cox.) With the exception of galloons, &c., which are woven by power, the amount of labour in fancy goods of this kind forms a great proportion of their value; but much difference of opinion prevails as to the average amount of wages earned by the operatives engaged, which vary from *5s.* to *30s.* per week. There is also a considerable difference between what *is* earned and what *could* be earned if greater industry were used by the operatives themselves; for, as it is customary for the work-people to work in their own houses, there is not the same means of compelling industry as in those places where the operatives are engaged in factories. To this cause, perhaps, more than any other, is to be attributed the distress which has hitherto prevailed among the people employed in this and the broad silk trade. Looking at the number of women and children employed as winders, &c. (forming, perhaps, one sixth of the whole), and the small wages paid to them, and also that the wages of the hand-loom weavers, who form by far the greater proportion of the number engaged, are likewise very trifling (the larger wages being paid only in fancy gauzes, and goods in which much taste is displayed in the pattern), the average of 8*s.* per week, in the riband trade, may be considered even an ample estimate.

The amount of the trade, estimated with reference to the weight consumed, shows an average value of about 50*s.* per lb., which is believed to be about correct, looking at the low value of galloons and plain sarsnets on the one hand, and the high value of fancy gauze ribands on the other.

There are few ribands of British manufacture made out of England. They were formerly made to a considerable extent in Dublin, but the manufacture there is now nearly, if not quite, extinct.

Handkerchiefs. — This branch embraces Bandanas, plain and figured Barcelonas, and fancy and gauze handkerchiefs of entire silk. The bulk of the silk employed is consumed at Manchester and Macclesfield, in the manufacture of Bandanas and Barcelonas; the remainder at Paisley, Glasgow, and elsewhere, in the manufacture of gauze and fancy handkerchiefs. It is difficult to fix on an average price for the material in the goods under this head, as a great many Bandanas (particularly in 1834) were manufactured from spun silk, for the advantage of claiming the drawback of 3*s.* 6*d.* allowed on exportation, the amount of which, in many instances, realised a large per-centage on the manufactured value. On the opening of the trade in 1826, a great stimulus was given to the manufacture of low silk goods generally, and these in particular, owing to the drawback allowed on all manufactured silk goods above the value of 14*s.* per lb.; a certificate or debenture for a corresponding weight of Italian organzine thrown silk imported, being produced to entitle the exporter to this advantage; and many Bandanas were, in consequence, made of so inferior a silk as barely to exceed the manufactured value required by the act. This trade was also promoted by the low price of debenture certificate, which in the first instance was to be obtained at 1*d.* and 2*d.* per lb.; but the demand for debenture increasing in consequence of the large quantity of low manufactured silks bought for exportation, the price speedily advanced. In 1834 it was selling at 1*s.* 3*d.* per lb.; and its present price is 2*s.* 7*d.*, with every prospect of a further increase. The inducement, therefore, to export these low goods has, to a great extent, ceased; and the manufacture of them has consequently been much reduced. The low prices, also, at which India Bandanas could be purchased in the market sensibly interfered with this manufacture, and has led to the production of higher qualities and more tasteful patterns in order to meet this competition. On the other hand, the manufacture of fancy and gauze handkerchiefs may have increased; but the proportion of silk used in the latter is but small compared with its value. It is believed that an average of 15*s.* per lb. is ample, considering the various qualities of the different articles under this head, and the large proportion which Bandanas bear to the whole.

The amount of labour and weekly wages are taken at the rate of 70 per cent. as in the two leading branches of the manufacture. The expense of winding, warping, weaving, &c. is certainly less in the heavier class of handkerchiefs, but there are many extra considerations (block-cutting, printing, &c.) which enter into the calculation; and in the manufacture of the lighter or more fancy class of goods the labour is at least cent. per cent.

Wages, wear and tear, &c. may be considered about the same as in the preceding branches.

Crapes.—Individuals well acquainted with this trade believe that the average production does not exceed 1,200 packets weekly; that each packet of crape does not contain, at an average, more than 2½ lbs. of silk (exclusive of dressing), and that the average value when manufactured may be about 5*l.* per packet. Supposing this estimate to be about correct, and allowing an additional weight of 4,000 lbs. for crape handkerchiefs, the whole silk consumed would appear to be about 160,000 lbs., taken at the average of Bengal, China, and Italian raw silk for 1834 (17*s.* 7½*d.*). The average price of raw instead of thrown is taken, because in this trade the manufacturers in general throw their own silk, and the waste is considered as compensated by the dye, the bulk of the goods being black. The manufacture is established at various places in Norfolk, Suffolk, Essex, Somerset, &c., and at Ponder's End, in Middlesex. Many of the crapes are woven by power, which occasions a reduction in the price of labour. In this branch labour is estimated at 50 per cent. on the value of the raw silk, and wages at 4*s.* per week (see Mr. Grout's Evidence, in *Silk Report*), which would give, including throwing, 7,350 persons, regularly employed. Owing to the decrease which has taken place in this trade, this number is much less than were employed some years since. The capital vested in throwing-mills and power and hand-looms is also so large in proportion to the amount produced, that, although the expense of labour is less, the interest on capital and wear and tear of machinery is much greater than in the other branches; and in forming an estimate of the per-centage necessary to cover this, both in throwing and weaving, craping and dressing, and to afford an adequate profit to the manufacturer, it may be fairly assumed at 35 per cent. on the cost of the raw material and labour expended.

Silk Hose and Gloves. — From an estimate of the *present* value of this trade it would appear that an extraordinary increase has recently taken place; and it is also gratifying to find that wages have experienced a corresponding advance. There is no doubt that, during the last year, the demand for these goods very considerably increased, and occasioned many of the cotton-frames to be employed in the manufacture of silk hose and gloves. In the opinion of several large and intelligent manufacturers the present state of the trade would appear to be as under:—

The estimated weight of raw silk used	5,000 lbs. per week.
value of ditto	4,500
number of individuals employed	15,000
average wages of ditto	11*s*.
value of the goods when manufactured	12,000*l*.

This estimate would show the annual weight of raw silk consumed 260,000 lbs.—its value 234,000*l*.—labour 429,000*l*., and the total value 624,000*l*.; but there is reason to think that the amount of labour is overstated, and also the number of hands said to be employed. So wide a disparity appears between this and Mr. Felkin's estimate of the hosiery trade in 1833, that a question arises as to the value of the trade in 1834. By Mr. Felkin's statement it appears that, in 1833 there were used 140,000 lbs. of raw silk, which, when thrown, was valued at 120,000*l*.: the wages for making which were 108,000*l*.; expense of finishing 13,000*l*.: total value of silk hose and gloves manufactured (exclusive of the manufacturers' profit, &c.) 241,000*l*. At that period an industrious workman's wages were about 10*s*. per week (subject to all deductions). Assuming that in 1834 a certain advance had taken place upon Mr. Felkin's estimate, although not to the extent which the present state of the trade would exhibit, the estimate in the table is believed to be as near a view as can be arrived at for that year. The difference appears in the quantity of silk consumed, the number of hands employed, and the average weekly wages. Looking at the number of women and children employed as winders, seamers, &c. (whose wages are very low), it is believed that 8*s*. per week is a fair average, which shows only 6,683 persons regularly employed at that period. The amount paid for labour, finishing, &c., is taken in proportion to Mr. Felkin's estimate.

Sewing Silks.—This properly falls to be considered as part of the trade of silk-throwing, but is placed in this table as accounting for a certain portion of the raw material which is consumed in a branch of the trade distinct from weaving, estimating the cost, labour, &c., on the principle of the following estimate, which is derived from the best sources of information, and may be considered as exhibiting the present state of the trade. The wages assigned in the table are above the average of throwing generally, and particularly looking at the number of children employed, may be liable to some question; but it would appear that they carry a higher average at this time; and it is understood that an advance has lately taken place.

The estimated weight of raw silk used	5,000 lbs. per week.
number of individuals employed	2,500
value of the raw silk	3,800*l*.
average wages of the hands	8*s*. 6*d*.
value of manufactured sewings	5,200*l*.

The interest on capital invested in machinery, and wear and tear, would justify the amount placed under this head.

Mixed Goods.—Under this head are comprehended all the varieties of manufacture in which silk forms a component part. The weight assigned would appear excessive, but looking at the extent and variety of the different fabrics, both in silk and cotton, and silk and worsted, besides the quantity which must be used in the manufacture of men's hats, the estimate will be found, on examination, to be rather under than over the mark. The manufacture of silk and worsted goods (bombasins, Norwich crapes, crape de Lyon, &c.) is established chiefly at Norwich; but the mixed manufactures generally, and particularly of silk and cotton, are spread over the whole kingdom. At Manchester and Paisley they are chiefly established, but are also pursued to some extent in Dublin, in the manufacture of poplins. In shawls alone, although the silk bears a small proportion to the manufactured article, a considerable weight must be consumed. In the opinion of a large and most intelligent manufacturer, it is believed that not less than 480,000 lbs. (including shawls of entire silk, which are few compared with the whole), is consumed in that manufacture at the present moment; and that not less than 20,000 persons (weavers, drawboys, winders, sewers, cutters, warpers, designers, &c.) are employed, earning from 3*s.* to 10*s.* per week. That trade is principally established at Paisley; but it is also pursued at Edinburgh (in higher qualities), and at Norwich to some extent. There is, perhaps, none among all our manufactures which presents a better field for the display of taste, or is better calculated for the division and remuneration of labour, than this article. The French have cultivated this trade to a greater extent than has been done, until lately, in this country; and the superiority of their patterns gave them an ascendency which the British shawls are only now beginning to dispute. On the opening of the trade, and for some years afterwards, it was apprehended, by some of our most extensive shawl manufacturers, that the competition with French shawls in the home market would be ruinous to our trade; and they petitioned government to prohibit their importation. Fortunately for themselves their demand was not acceded to; and they now generally acknowledge that French competition, by compelling an improvement in the patterns and style of the goods, has effected more towards the extension of the shawl trade than even the most ardent imagination could have hoped for in so short a space of time. French pattern being immediately copied here, our manufacturers are now enabled to send into the market, at a much lower price, shawls of home manufacture, not only *in imitation* of the French, and not to be distinguished from them, but of native designs in no way inferior. And it would seem that, in this branch, we have arrived at that point where the question arises — Who shall supply the markets of Europe? Our manufacturers must still improve their patterns, particularly as respects the contrast of colours. If schools of design were established in Paisley with this view, and a public exhibition of patterns were set on foot by the manufacturers, it would be productive of great service, by creating emulation in an article so particularly influenced by taste, and lead to a superiority in this manufacture, not likely to be endangered by the rivalry of our neighbours.

The varieties of mixed manufactures are so exceedingly numerous that it would be vain to recapitulate them. The estimate, however, is formed *relating to the value of the silk alone*, and must not be considered as exhibiting, with any degree of accuracy, the ultimate amount of these manufactures, which, there can be no doubt, greatly exceed the total value estimated. Taking the small proportion which the silk bears to the whole, the value of labour may be fairly assumed, *relatively to the silk*, at 150 per cent., and the interest on capital, profit, &c., at 60 per cent. From the low rate of wages paid in many of the principal branches of the mixed manufactures, a higher estimate cannot be assigned than 7*s.* per week, looking at the great number of women and children who are employed. The silk used in the manufacture of many articles of small wares, men's hats, &c., is included in this and the following branch.

All other Articles, entire or mixed. — There is a great variety of small trades in which silk is used, but where the value of the material bears a very small proportion to the value of the article produced. This particularly applies to the fabrication and embroidery of blond lace, and other embroidered goods of different descriptions; to the manufacture of trimmings, braids, fringes, bell-pulls, and many articles of upholstery. The labour is estimated at 300 per cent. on the value of the silk; but the wages paid (and in none more particularly than in the embroidery of lace) are exceedingly small; the employment under this head generally being, to a great extent, in the hands of women and girls. It is believed that the average of 7*s.* per week may be even an excessive estimate, taking into consideration the class of persons employed. The profits, also, are larger in proportion, and may be safely taken at 60 per cent., relatively to the silk and labour expended.

The foregoing table (taking the average estimate of wages to be correct) would show 207,304 individuals regularly engaged in the silk manufacture in all its branches, exclusive of builders, mechanists, carpenters, handicraftsmen, and labourers of all descriptions; and also of the great number of persons who are dependent on those directly employed for their subsistence. But this is merely the productive part of the trade, and may be viewed as bringing the manufacture only half way to the hands of the public. At this stage it is taken up by another class, perhaps equally large, who derive their subsistence by bringing the goods to the point of consumption, viz., the wholesale and retail dealers, their clerks, warehousemen, shopmen, packers, and porters; the tailors, dressmakers, and milliners, and the vast multitude of females employed in that business; the great variety of trades, scarcely possible to enumerate, which are more or less mixed up with the consumption of silk, either raw, thrown, or manufactured; the carriers and their servants, employed in transporting the goods to and from the places where they are manufactured, and afterwards to where they are required for consumption; the merchants, agents, brokers, and others interested in the export of the goods; and the innumerable persons who receive employment and subsistence therefrom. To take into consideration the mass of individuals who thus directly and indirectly draw emolument from this great manufacture, is a subject worthy of contemplation to the curious; but beyond the possibility of calculation.

Account of the Quantities of Raw Silk and Waste imported in 1835 and 1836, specifying the Countries from which the same were imported, and the Quantities brought from each; with a statement of the Exports of Raw, and of the Imports of Thrown Silk.

Description.	Imports.		Exports.		Retained for Home Consumption.		Nett Revenue.	
	1835.	1836.	1835.	1836.	1835.	1836.	1835.	1836.
Silk, Raw, viz.—	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	L.	L.
From India	961,218	1,420,961	—	—	—	—	—	—
China	737,480	1,277,087	—	—	—	—	—	—
Turkey, Syria, & Egypt	672,666	677,830	—	—	—	—	—	—
Italy	245,303	180,749	—	—	—	—	—	—
France	915,265	816,581	—	—	—	—	—	—
Other Countries	204,512	79,924	—	—	—	—	—	—
Total of Raw Silk	3,737,480	4,455,061	115,580	113,800	4,027,149	4,230,251	17,265	18,072
Silk, Waste, Knubs, and Husks, viz.—								
From India	144,474	24,490	—	—	—	—	—	—
China	- -	224	—	—	—	—	—	—
Italy	275,968	286,344	—	—	—	—	—	—
France	911,482	1,202,030	—	—	—	—	—	—
Other Countries	86,040	97,001	—	—	—	—	—	—
Total of Waste, &c.	1,421,964	1,608,289	4,133	87,645	1,379,697	1,584,968	616	712
Silk Thrown, viz.—								
From Italy	1,169	12,040	Foreign Thrown.		—	—	Excess of Drawback.	
France	178,242	345,316	16,760	24,061	—	—		
			British Thrown.					
Other Countries	36,472	39,304	—	—	—	—	20,698	4,650
Total of Thrown Silk	215,883	396,660	16,760	24,061	251,370	294,201		

Account of the Quantity of the Silk Manufactures of Europe and India imported in 1835 and 1836, the Quantities thereof entered for Consumption, and the Gross Amount of Duty received on the same.

Description.	Imports.		Exports.		Quantities Retained for Consumption.		Net Revenue.	
	1835.	1836.	1835.	1836.	1835.	1836.	1835.	1836.
Silk Manufactured Goods, viz.—							L.	L.
Manufactures of Europe,—								
Silk or satin, and silk or satin ribbons - - lbs.	99,566	137,052	12,562	7,595	89,140	127,749	168,372	180,074
Gauze, and gauze ribbons —	35,108	15,150	3,199	735	32,808	14,470		
— Tissue foulards - —	25,775	15,399	1	27	25,630	15,397		
Crape - - - - —	3,664	3,251	513	121	3,072	3,130		
Velvet, and velvet ribbons —	8,773	16,506	1,227	992	7,720	15,117		
Ribbons embossed or figured with velvet - - —	109	552	- -	12	109	540		
Fancy silk, net or tricot - —	2,156	3,450	2	61	2,155	3,390		
Silk mixed with metal - —	304	322	75	30	206	285		
Total, entered by weight —	175,455	191,682	17,579	9,573	160,840	180,078		
Plain silk, lace or net, called tulle - - sq. yards	10,704	12,028	600	2,000	10,104	10,028		
Millinery,—								
Turbans or caps - number	509	433	178	108	367	336		
Hats or bonnets - —	696	762	257	254	422	478		
Dresses - - —	171	205	157	57	106	145		
Entered at value - -	46	6	- -	- -	46	6		
Manufactures of silk, or of silk and other materials, not particularly enumerated - - - value	85,877	93,512	6,553	7,082	79,324	86,430		
Manufactures of India, viz.—								
Bandannoes, romals, and silk handkerchiefs - pieces	388,413	351,066	280,916	220,785	162,327	130,114	8,644	25,911
Silks, and crape in pieces —	2,982	3,943	5,059	4,615	1,932	1,314		
Crape shawls, scarfs, & handkerchiefs - number	7,448	8,119	7,516	4,567	2,740	3,648		

Account of the real or declared Value of the Silk manufactured Goods exported from the United Kingdom during each of the eight Years ending with 1834, specifying the Countries to which the same were exported, and the Value of those sent to each.

Countries.	1827.	1828.	1829.	1830.	1831.	1832.	1833.	1834.
	L.	L.	L.	L.	L.	L.	L.	L.
Russia	3,156	3,790	2,304	509	497	1,612	1,625	1,448
Sweden	- -	35	574	15	191	308	364	357
Norway	170	36	140	462	256	78	245	461
Denmark	396	572	173	61	143	121	258	114
Prussia	10	65	15	- -	- -	- -	35	
Germany	18,433	11,741	6,652	15,717	12,909	19,376	19,171	21,494
Holland	9,645	6,621	12,875	14,337	5,621	25,782	7,367	21,713
Belgium							27,229	18,240
France	4,661	11,009	32,047	34,808	43,462	75,187	76,325	60,346
Portugal, Proper	7,528	2,635	3,809	5,014	4,466	4,072	8,013	15,143
Azores	184	34	112	- -	262	156	699	1,427
Madeira	20	325	123	71	260	270	370	1,194
Spain and the Balearic Islands	6,034	18,595	32,232	30,473	24,353	14,776	17,159	7,861
Canaries	405	371	175	218	260	149	360	114
Gibraltar	7,681	12,418	5,321	4,967	3,960	10,906	10,262	4,294
Italy and the Italian Islands	4,330	3,183	2,936	12,038	7,627	9,108	9,716	3,635
Malta	191	366	228	309	765	1,856	2,307	1,226
Ionian Islands	80	- -	150	149	12	61	287	373
Turkey and Continental Greece (exclusive of the Morea)	938	306	359	1,332	2,725	2,626	1,892	1,291
Morea and Greek Islands		- -	- -	- -	- -	- -	- -	332
Egypt (Ports on the Mediterranean)	- -	130	80	- -	125	40	230	80
Tripoli, Barbary, and Morocco	40	50	- -	- -	- -		- -	9
Western Coast of Africa	68	616	146	493	465	1,297	897	714
Cape of Good Hope	2,358	1,882	4,619	6,748	8,967	11,080	8,292	10,995
St. Helena	70	28	121	- -	22	114	114	292
Isle of Bourbon	- -	- -	- -	- -	- -	- -	- -	71
Mauritius	1,181	3,070	1,828	6,602	1,313	2,658	1,610	2,590
East India Company's Territories and Ceylon	10,031	16,693	7,089	5,677	5,271	17,385	20,337	7,838
China	- -							271
Sumatra and Java	- -	267	695	1,245	500	431	187	60
Philippine Islands	- -	- -	- -	350	- -	- -	- -	22
New South Wales, Van Diemen's Land, and Swan River	5,009	8,403	5,746	8,577	17,075	12,999	22,860	31,035
British North American Colonies	11,711	14,860	16,686	71,613	93,013	90,665	94,304	69,063
British West Indies	13,410	10,106	19,383	28,729	27,508	22,896	35,012	35,424
Hayti	177	850	1,139	1,930	2,446	2,502	2,952	926
Cuba, and other Foreign West Indies	15,908	10,330	8,407	10,456	11,924	14,437	10,365	13,497
United States of America	67,111	46,587	58,693	195,957	237,985	92,255	251,278	200,306
Mexico	6,880	4,114	2,577	16,972	13,548	2,431	5,840	5,006
Guatemala	70							
Colombia	2,109	1,752	1,982	1,870	4,403	3,512	1,642	2,264
Brazil	14,100	37,458	10,969	13,748	7,328	12,172	27,783	27,600
States of the Rio de la Plata	2,388	6,394	7,253	10,365	13,319	24,786	11,735	19,274
Chili	12,225	9,574	9,294	4,794	3,615	25,681	23,545	20,635
Peru	7,200	9,894	9,122	8,880	9,333	12,070	22,588	10,989
Isles of Guernsey, Jersey, Alderney, and Man	183	702	1,886	9,484	11,145	13,934	11,941	13,201
Total	236,113	255,871	267,930	521,010	578,874	529,691	737,404	637,198

The following regulations have reference to the children employed in woollen, cotton, and linen, as well as to those employed in silk, factories: —

Statutory Regulations as to the Employment of Children in Factories. — No statutory restrictions respecting the employment of children in the mills and factories of the United Kingdom existed until the year 1802, when an act of parliament was passed (42 Geo. 3.) for the preservation of the health and morals of apprentices and others employed in cotton and other factories; and directing the magistrates to report whether the factories were conducted according to law; and to adopt such sanatory regulations as they might think fit. This act was followed, in 1816, by an act, generally called Sir Robert Peel's Act, imposing various regulations on the employment of children in cotton-mills.

Both of these acts were repealed, in 1831, by an act 1 & 2 Will. 4. c. 39., commonly called Sir John Hobhouse's Act, which provided that in cotton factories, to which alone it related, no child could legally be employed till it had attained the age of 9 years; and that no person under 18 years of age could be suffered to remain in the factories more than 12 hours in one day; and that on Saturdays they should only be employed in the factories for 9 hours.

Sir John Hobhouse's act was repealed, in 1833, by the act 3 & 4 Will. 4. c. 103., which contains the following provisions, comprehending the whole statutory regulations at present applicable to cotton and other factories in the United Kingdom: —

1. That after the 1st of January, 1834, no person under 18 years of age shall be allowed to work in the night; that is, between half-past 8 P. M. and half-past 5 A. M., in any cotton or other factory in which steam, or water, or any other mechanical power, is or shall be used to propel the machinery, excepting in lace-factories.

2. That no person under 18 shall be employed more than 12 hours in one day, nor more than 69 hours in one week.

3. That there shall be allowed, in the course of every day, not less than 1½ hour for meals to every person restricted to the performance of 12 hours' work.

4. That after the 1st of January, 1834, no child, except in silk-mills, shall be employed who shall not be 9 years old.

5. That after the first of March, 1834, no child, except in silk-mills, shall be employed in any factory more than 48 hours in any one week, nor more than 9 hours in any day, who shall not be 11 years old; nor after the 1st of March, 1835, who shall not be 12 years old; nor after the 1st of March, 1836, who shall not be 13 years old; and that these hours of work shall not be exceeded, even if the child has worked during the day in more factories than one.

6. That children, and young persons whose hours of work are regulated, shall be entitled to 2 holidays and 8 half-holidays in every year.

7. That children, whose hours of work are restricted to 9 hours a day, are not to be employed without obtaining a certificate from a physician or surgeon, certifying that they are of the ordinary strength and appearance of children of the age before mentioned, which certificate is to be countersigned by some inspector or justice.

8. That it shall be lawful for his majesty to appoint, during pleasure, 4 persons to be inspectors of factories, with extensive powers as magistrates, to examine the children employed in the factories, and to inquire respecting their condition, employment, and education; and that one of the secretaries of state shall have power, on the application of an inspector, to appoint superintendents to superintend the execution of the act.

9. That those inspectors are to make all rules necessary for the execution of the act, and to enforce the attendance at school, for at least 2 hours daily, out of 6 days in the week, of children employed in factories; from whose weekly wages a deduction, not exceeding 1 penny in every shilling, for schooling, shall be made.

10. That no child shall be employed who shall not, on Monday of every week, give to the factory master a certificate of his or her attendance at school for the previous week.

11. That the interior walls of every mill shall be whitewashed every year.

12. That a copy or abstract of the act shall be hung up in a conspicuous part of every mill.

13. That the inspectors shall regularly, once a year, report their proceedings to one of the secretaries of state.

The act also contains regulations extending the hours of work, where time shall be lost by the want of or an excess of water in mills situated upon a stream of water; respecting the steps to be taken in order to obtain regular certificates of age for the children requiring them; respecting the erection of schools where necessary; and respecting the proceedings to be had before inspectors and magistrates for enforcing the act, and the right to appeal from their decisions.

Power Looms.—An authentic and detailed statement of the number of power-looms employed in the different departments of industry, in 1834, has been drawn up from the Reports of the Factory Inspectors, and printed by order of the House of Commons. The following are its results:—

Counties.	EMPLOYED IN THE MANUFACTURE OF						
	Cotton.	Woollen.	Worsted.	Silk. 1	Linen.	Mixed Materials.	Total.
Lancashire - - -	61,176	1,142	- -	366	- -	- -	62,684
Cheshire - - -	22,491	8	- -	414	-	- -	22,913
Yorkshire - - -	3,885	801	3,123	- -	-	- -	7,809
Derbyshire -	2,219	- -	- -	- -	- -	- -	2,219
Other English and Welsh counties -	754	185	- -	934	41	25	1,929
Scotland - - -	17,531	22	- -	- -	168	- -	17,721
Ireland - -	1,416	- -	- -	- -	190	- -	1,516
	109,472	2,158	3,123	1,714	309	25	115,801

Account of the Number of Adults and Children employed in the different Woollen, Cotton, Linen, and Silk Factories in England, Wales, Scotland, and Ireland, classifying them according to their Ages, and exhibiting the Numbers employed in each Department and Country.

Countries.	Number of Factories.		NUMBER AND AGE OF PERSONS EMPLOYED. Between 8 and 12 Years.			Between 12 and 13 Years.			Between 13 and 18 Years.			Above 18 Years.			Total Persons.		
	At Work.	Empty.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Cotton. England -	1,070	42	4,030	3,073	7,103	9,196	7,865	17,861	23,974	29,869	53,843	50,675	53,410	104,085	87,875	94,217	182,092
Wales - -	5	- -	- -	- -	- -	56	33	89	146	208	354	250	458	708	452	699	1,151
Scotland -	159	- -	454	538	992	1,258	1,832	3,090	2,845	7,597	10,442	6,168	12,403	18,571	10,529	22,051	32,580
Ireland - -	28	- -	44	58	102	153	181	334	286	561	847	960	1,553	2,513	1,639	2,672	4,311
	1,262	42	4,528	3,669	8,197	10,663	9,911	20,574	27,251	38,235	65,456	58,053	67,824	125,877	100,495	119,639	220,134
Wool. England -	1,102	9	2,317	2,158	4,475	3,936	3,835	7,771	9,497	10,064	19,561	18,613	16,041	33,654	34,363	31,098	65,461
Wales - -	85	- -	47	29	76	119	61	180	164	101	265	190	66	264	528	257	785
Scotland -	90	- -	104	77	181	210	332	542	315	698	1,013	1,083	686	1,769	1,792	1,723	3,505
Ireland - -	36	- -	13	19	32	25	40	65	162	249	411	674	341	1,015	874	649	1,523
	1,313	9	2,481	2,283	4,764	4,290	4,268	8,558	10,138	11,112	21,250	20,568	16,134	36,702	37,477	33,797	71,274
Silk. England -	231	25	2,458	3,871	6,329	938	1,674	2,612	2,596	6,546	9,142	4,009	7,855	11,864	10,001	19,946	29,947
Wales - -	0	- -															
Scotland -	6	- -	28	52	80	14	37	51	40	244	284	103	168	271	185	501	686
Ireland -	1	- -	- -	2	2	- -	- -	- -	- -	25	25	2	20	22	2	47	49
	238	25	2,486	3,925	6,411	952	1,711	2,663	2,636	6,815	9,451	4,114	8,043	12,157	10,188	20,494	30,682
Flax. England -	152	- -	487	434	921	1,048	1,173	2,221	1,929	4,192	6,121	2,551	4,379	6,930	6,015	10,178	16,193
Wales - -	0																
Scotland -	170	- -	104	175	279	609	918	1,527	1,129	3,064	4,193	1,550	5,860	7,410	3,392	10,017	13,409
Ireland - -	25	- -	1	15	16	125	199	324	399	1,308	1,707	463	1,171	1,634	988	2,693	3,681
	347	- -	592	624	1,216	1,782	2,290	4,072	3,457	8,564	12,021	4,564	11,410	15,974	10,395	22,888	33,283
Totals of the four Manufactures -	3,160	76	10,087	10,601	20,588	17,687	18,180	35,867	43,482	64,726	108,208	87,299	103,411	190,710	156,355	196,818	353,173
	3,236																

SECT. VI. *Manufacture of Hardware, Watches, Jewelry, &c.*

Hardware.—We have given in a previous chapter an account of the extraordinary increase in the production of iron since 1780. But, as was to be anticipated, the articles of utility, convenience, and ornament, formed out of it, have increased in an equal degree. In no country in the world is iron, as well as copper and brass, converted to so many purposes as in Britain; and, though some countries may vie with us in the production of a few articles of hardware and cutlery, yet, taking the whole range of the manufacture into view, our superiority in it seems to be as decided as in that of cotton; and in nothing, perhaps, is the triumph of art, science, and industry more conspicuous than in the astonishing variety, convenience, beauty, and cheapness of our hardware articles. The manufacture includes every sort of iron-work, from the massive castings of an iron bridge, and the anchors of a first rate man-of-war, down to the minute and delicate furniture of a lady's work-box. The heavy and coarser articles are principally prepared at the great iron founderies in South Wales, Staffordshire, Colebrook Dale, and other places it is unnecessary to specify. The production of the finer articles, which comes nearer to what is called a factory business, is principally carried on in Birmingham and Sheffield,—the two grand seats of the hardware manufactory,—and in their vicinity.

We have little, or, rather, no satisfactory information as to the origin and early progress of the manufacture at Birmingham. Hutton, the historian of the town, supposes that iron was made in the parish by the Britons or Romans; and appeals, in proof of this hypothesis, to the huge mountain of calx, or cinder, at Aston furnace, on the border of the parish.—(*History of Birmingham*, 4th ed. p. 23.) But whatever weight may be attached to this, it is, at all events, certain that our information as to the early modern history of the town is very scanty. It had, however, attained to considerable eminence, as a seat of the hardware trade, previously to the middle of the sixteenth century; for Leland, who visited it about 1540, describes it in his *Itinerary* as "a good market town;" adding, "There be many smithes in the town that use to make knives and all manner of cutting tools, and many lorimers that make bittes, and a great many naylers; so that a great part of the town is maintained by smithes, who have their iron and sea-coal out of Staffordshire." —(*Hutton*, p. 19.) From this distant epoch, the manufacture, though it has sustained some severe checks, has gone on increasing, with more or less rapidity, till it has arrived at its present unexampled height of greatness and prosperity.

Its proximity to coal and iron, both of which are found in all but inexhaustible quantities in its immediate vicinity, were, no doubt, the primary causes of the establishment of the hardware manufacture at Birmingham; and, notwithstanding the competition they have had to sustain, the enterprise, skill, and good fortune of the citizens have enabled them to keep the start they had once gained. The town is situated almost in the centre of the kingdom, and is not intersected by any great navigable river. But the obstacles thence arising to the easy transport of articles to and from the town have been obviated by the construction of canals, by which it has a water communication with the great ports of London, Liverpool, Hull, and Bristol. The railroad now in progress from London to Liverpool passes through Birmingham; and it will, no doubt, become the centre of a considerable railroad system.

Mr. Stevenson has given the following enumeration—which, however, is far from complete—of the more important, as well as of some of the curious, minute, and almost endless variety of articles made at Birmingham. The manufacture of each is, in general, a separate trade; and the extreme subdivision of employments thence arising accounts, in some measure, for the superior skill of the workmen, and the excellence of the manufacture.

Files, guns, pocket-books, gilt toys, and jewellery, watch-chains and keys, gunlock filer, plated goods, fire-irons, awl blades, brass-founder, saw and edge tools, lock and latch-maker, swords, bits, buttons, snuffers, bone and ivory toys, cut sprigs, die-sinker, carriage lamps, harness-plater, steel chains, cast nails, thimbles, braces, cabinet cases, inkstands, ferrules, compasses, ivory combs, gun-polisher, spectacles, steel toys, pearl buttons, stamper and piercer, stirrups, packing-boxes, japan wares, planes, sword-hilts, casting pots, spring latchets, gold-hand manufacturer, paper toys, chaser, saddlers' brass-founder, round bolt and chafing-dish maker, scale-beam, steel-yard, and screw-plate maker, bridle-cutter, brass nails and curtain rings, needles, vice-maker, clock-dial painter, curry-combs, rule-maker, link-buttons, wire-drawer, scabbards, iron spoons, spade-tree maker, fork-maker, looking-glass, toy, and army button-maker, paper-box turner, mouse-traps, sand-paper, gunstocker, parchment maker, last and boot-tree maker, glass-grinder, anvils, braziers' tools, gun-furniture, filer, pendant maker, ring-turner, bellows, gun-finisher, saddle-tree maker, hammers, carpenters' and shoemakers' tools, brass-cock founder, hand-whip mounter, pearl and hair worker, coach-harness forger, button-shank maker, patten-ties, gimlets, tea-urns, medals and coins, copying-machines, pneumatic apparatus, ramrod and chain maker, gun-case maker, smiths' bellows-pipe maker, coffin nails, curtain rings, glass beads, engine-cutter, scale-beams, wood-screw maker, bright engraver, putty-maker, and enamel box-maker, horse, dog, and negro collar, fetter, and dog-lock maker, pencil-case maker, glass-stainer, paper-stainer, bone-mould turner, tortoise-shell box and tooth-pick case maker, warming-pans, fishing-tackle, cruet-frames, picture-frames, bayonets, malt-mills, hinges, leather and horn powder-flasks, cork-screws, gun-flints, steel keys, and combs, glass buttons, bed and coach-screw maker, umbrella furniture maker, paper-mould maker, button-solderer, paper spectacle-case maker, tin nail and rivet maker, burnisher of toys, shagreen and morocco-case maker, seal manufacturer, horn-spoons and buttons, line-maker, ladies' slippers, stirrup-maker, curb-maker, spur and rowel maker, powder-flasks, sticks and rods for angling, sleeve-buttons, clock-hands, brass mouldings, augers, cock-heel maker, candle moulds, teapots, case-plate maker, filigree-worker, coach-spring manufacturer, watch key and glass maker, patten-rings, thong-maker, varnish-maker, dog and cart chain maker, printing-presses, pins, buckle-chaser, jacks, military feathers, barometers, morocco decanters and cruet stands, packing-needles, horn lanterns, buckle-ring forger, toy watch-maker, glass eyes for dolls, mortise and rim locksmith, button-card cutter, iron-drawer, gridiron and round bolt maker, spades, dials, gilt ring-maker, steel-box, spectacle-case, and gun-charger maker, pocket-lock maker, lamp-manufacturer, lead toy, stock-sinker, glass-house mould maker, casting-mould maker, snuff-boxes, &c.

Of the articles mentioned above, firearms are among the most important. Their manufacture has been carried on at Birmingham since the reign of William III., under whose auspices it was introduced. During last war more than two thirds of the fire-arms required by the Board of Ordnance were produced here; and it appears from the official returns that, in the interval between 1804 and 1818, nearly 5,000,000 firearms were furnished on account of government and of the private trade. At the conclusion of hostilities, the cessation of the greater part of this extraordinary demand was productive of much distress and embarrassment. But in no long time industry began to revive; and the workmen, who had been thus suddenly thrown out of employment, were gradually taken into those businesses that have either grown wholly up, or been greatly extended, since 1815. There is a proof-house at Birmingham; and all arms manufactured in the town and its vicinity are required, under a heavy penalty, to be subjected to the test required by the Board of Ordnance: if they stand this they are marked by a stamp, to counterfeit which is felony.

The manufacture of swords may also be regarded as one of the staple trades of Birmingham.

The largest manufactory of steam-engines in the world is that carried on at Soho, in the immediate vicinity of Birmingham. It was established by Mr. Boulton, the partner of Mr. Watt, the great improver of the steam-engine,—a man to whose genius Britain is, probably, as much indebted as to that of any other individual. The engines at present made at Soho, under the superintendence of Mr. Watt's son, maintain their former celebrity: they are in very extensive demand, and the works employ a great number of hands. The establishment at Soho is not, however, restricted to the manufacture of steam-engines. It produces large quantities of vases, candelabras, and other descriptions of goods in bronze and *or moulu*, of the most beautiful workmanship. Plate is also largely produced at this establishment; and here a great part of the copper coinage of the country used to be executed.

Most sorts of cast-iron articles are made at Birmingham; and the beauty of the patterns, the goodness of the workmanship, and, what may seem not very consistent with these qualities, their cheapness, have been wonderfully increased within these few years. There has, in consequence, been a greatly extended demand for them, and a proportional increase of the quantity produced.

Little is known of the early history of the brass manufacture in Birmingham, except that it was introduced about 1748. It has been very greatly improved and extended within the present century. It embraces a vast variety of articles of utility and ornament. Lamps, chandeliers, candlesticks, vases, fenders, fire-screens, handles for locks, door-knockers, &c., are among the most prominent articles.

Exclusive of solid gold and silver plate, of which the quantity produced is comparatively inconsiderable, large quantities of silver and gold, but especially the former, are used at Birmingham in the plating and gilding of spoons, knives and forks, teapots, plates, sugar-basins, buttons, chains, thimbles, and an infinite variety of other articles. The consumption of silver in the various departments here is estimated at about 150,000 oz. a year.—(*Penny Cyclopædia*, art. BIRMINGHAM.) Latterly the plating business has sustained a check, by the substitution for plated goods of articles made of the metallic compound called *albata*. These do not look so well as plated goods, when the latter are new; but they are comparatively durable. All articles that were formerly made of pewter, and most of those that are now made of silver, or which are plated, have their counterpart in Britannia-metal. This is a compound of tin, the regulus of antimony, copper, and brass. The articles made of it are extremely cheap, and have a good deal of beauty; and, when care is taken to buy those that are sufficiently massive, they are also very durable. Articles of Britannia metal are made in Birmingham; but Sheffield is the principal seat of this manufacture, employing in it above 600 individuals.*

Japanned artilces of every form, variety, and price, are very extensively manufactured at Birmingham. The best trays, and other articles of that description, are made of *papier mâche;* the designs on some of them being of great beauty and elegance.

Birmingham was said by Mr. Burke to be the "toy-shop of Europe." It is still entitled to this distinction; though, as the manufacture of other and more important articles has increased, during the present century, more rapidly than that of toys, the latter does not bear the same proportion to the entire trade of the town that it formerly did.

The button is placed by Hutton at the head of the toys, though it seems to be entitled to no mean place among articles of utility. The fashion of buttons, as of most other things, has varied exceedingly. It is now, for the most part, plain, or but slightly raised. Hutton says that, in 1818, the art of gilding was carried to such perfection that three penny-worth of gold was made to cover a gross of buttons!—(p. 106.) The demand for buttons for home consumption is immense; and, notwithstanding the loss of some branches of the trade, large quantities are exported. Some idea of the magnitude of this apparently trifling business may be formed from the fact, that a single manufacturer had in his workshop, in 1834, as many as 10,000 double sets of cut steel dies for livery buttons only!—(*Manufactures in Metal.—Lardner's Cyclopædia*, vol. iii. p. 393.)

Buckles long ranked as one of the staple articles of Birmingham manufacture; and the rise, mutations, and extinction of the trade would furnish materials for an interesting work. Large square buckles, plated with silver, were the fashion in 1781; but soon after that period shoe-strings began to be introduced; and, the taste for them having rapidly extended, the demand for buckles declined in an equal degree. In 1791, his late majesty, George IV., then prince of Wales, endeavoured, at the solicitation of a deputation from Birmingham, Walsall, and other places, to revive the taste for buckles. But the tide of fashion set too strongly in the opposite direction to be controlled even by the example of royalty: the use of the buckle was entirely given up. The manufacture ceased to exist; and the thousands who depended on it for support were reluctantly compelled to seek for subsistence by resorting to other businesses.

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* *Treatise on Manufactures in Metal.—Lardner's Cyclopædia*, vol. iii. p. 102.

The quantity of fancy seals, brooches, clasps, and other trinkets, made of what is called *Birmingham gold* and polished steel, is only less wonderful than their beauty and cheapness. Few, indeed, unless they have seen some of the warehouses filled with these articles, can form any just idea of the extent to which they are produced, and of their variety. The toy and trinket trade, in its various ramifications, is quite immense. Mr. Osler, a manufacturer of Birmingham, stated, before a committee of the House of Commons, in 1824, that he had received a single order for 500*l.* worth of dolls' eyes! — (*Report on Artisans and Machinery*, p. 314.)

Any article, how trivial soever, may, in fact, if it get into extensive demand, become the subject of a very large business. Mr. Phipson's pin manufactory, in this town, employs about 200 persons on the premises and 50 out of doors, besides a good deal of work done in Stafford, Shrewsbury, and Hereford county gaols. * The steel pen is another example of this. It is a trifling article; but the consumption is such that a single maker of steel pens at Birmingham employed, in 1835, about 250 work-people, and consumed about 40 tons annually of fine sheet steel in his factory; each ton of steel being estimated to produce nearly 10,000 gross of pens! — (*Penny Cyclopædia*, art. BIRMINGHAM.) And exclusive of this immense supply, and of those furnished by other manufacturers in Birmingham, large quantities are made at Sheffield and in the metropolis. The best pens are said to be manufactured in the latter.

There are but few large capitals employed in the manufactures of Birmingham. Exclusive of the great establishment at Soho, and a few others, most of the works carried on in the town and neighbourhood are on a comparatively small scale. The greater number of the manufacturers have only very limited capitals; some not possessing more than from 500*l.* to 800*l.*; and many not more than from 2,000*l.* to 4,000*l.*, employing from 5 to 30 hands. The work is partly carried on in workshops; but a large portion of it is paid by the piece, and is carried on in the houses of the work-people to whom it is given out to be executed. There is also a class of middlemen, or of workmen called *undertakers*, from their receiving the rude material from the manufacturer, and undertaking to get it wrought up. Women are extensively employed in polishing the goods, in the glass toy branch, and in the manufacture of braces. Boys are chiefly employed by the out-workers and undertakers as apprentices, receiving the first year about 1*s.* a week, and the last from 6*s.* to 12*s.*, exclusive of their clothing; but they get their food at home; and in most instances indeed, work in the houses of their parents. The wages of the men vary according to the deparments in which they are engaged, their skill and dexterity, and the state of trade at the time. In some branches, where superior skill and attention are required, wages are very good; being little, if at all, inferior to those earned by the best workmen in the metropolis. Some of the small manufacturers have accumulated large fortunes; and the condition of the work-people is, on the whole, very favourable. — (*First Report of Factory Commissioners*, B. 1. p. 2.)

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* This is the statement made by Mr. Phipson himself to the Commissioners of Factory Inquiry. In *Lewis's Topographical Dictionary*, art. BIRMINGHAM, Mr. P. is said to employ in his factory 1,000 persons.

No means exist of forming any estimate of the value of the articles produced in Birmingham and its immediate vicinity. It must, however, be very great; and, probably, (including gold and silver plate,) does not fall short, if it do not exceed, 3,000,000*l.* The value of the raw material, or of the iron, copper, or brass, bears, in most descriptions of Birmingham goods, a very small proportion to that of the labour expended upon them; and, in some of the lighter and finer finished goods, becomes almost inappreciable. The manufacture of watch-springs, in which the value of the iron does not amount to nearly the *two thousandth part* of the value of the finished article, is an instance of this.

The town of Birmingham, with the parishes of Aston and Edgbaston, had, in 1831, a population of 146,986. But Soho, though a suburb of Birmingham, being in Staffordshire, is not included in the above. The country for several miles round is exceedingly populous; and the population is almost entirely dependent on the working of metals. According to the official returns there were, in 1831, about 10,000 males, of 20 years of age and upwards, employed in Birmingham, Aston, and Edgbaston, as follows, viz. —

At Birmingham, makers of anvils 5, augers 1, awl-blades 7, bayonets 1, beer-machines 2, bellows 44, bellows-pipes 7, blacking 1, bolts 5, bone toys 3, brace-bits (wimbles) 3, bottle-jacks 2, braces 8, brass locks 1, brass-workers 1,785, braziers 7, bridle-bits 18, bridles 5, Britannia teapots 51, bronze 1, buckles 10, burnishers 2, buttons 646, cabinet locks 3, candlesticks 4, casters 94, casting-pots 3, chasers 29, clock-dials 4, clock-works 2, coach lace 1, coach-springs 7, coach-founders 5, coffin furniture 2, coral-carver 1, corkscrews 3, curry-combs 1, die-sinkers 60, dirt-washer 1, dog-collars 4, edge-tools 8, enameller 1, fenders 17, files 6, fire-irons 21, fishing-rods 1, floor-cloth 3, forgers 14, frying-pans 7, gas 3, gilders 15, gilt toys 255, gimlets 25, girth-springs 1, glass-blowers 16, glass 7, glass-cutters 114, glass pinchers 3, glass toys 24, gold-cutler 1, goldbeaters 18, gold plater 1, grinders 15, gauge-plater 1, gun-makers 1,221, gun-barrel filers 4, gun implements 19, gun-lock filer 1, hinges 19, homes 1, horn-presser 1, iron-filers 4, iron plate-workers 6, japanners 252, jewellers 861, key maker 1, lamp-makers 39, lanterns 1, lock-filers 3, locksmiths 113, machines 2, malt-mills 12, mathematical instruments 16, metal rollers 11, metal teapots 1, military ornaments 3, miniature frames 1, modellers 7, needles 2, paper trays 1, patent cards 1, patent sashes 5, pearl-workers 3, pewterers 5, picture frames 2, pins 9, pistol finisher 1, planes 26, platers 616, polishers 7, potash 1, refiners 20, repairer 1, ring-turners 4, rollers 3, ruler-makers 55, saddle-trees 1, saddlers' tools 1, saw-handles 2, saws 7, scale-beams 25, Scotch snuff-boxes 1, screws 27, similor 1, silversmiths 277, snuffers 40, solder 2, spades 6, spectacles 16, split-rings 5, spoons 67, spurs 2, stampers 94, steel toys 171, steelyards 2, stirrup-filers 6, strikers 2, sword-cutlers 8, tarpaulins 4, tea-trays 21, tea-urns 11, thimbles 9, toymen 174, thread 2, tools 79, tortoiseshell-workers 7, toys 13, traces 2, Tutania (Tutenag) tea-pots 6, varnish 2, vices 6, violins 1, waiters 4, watch-glasses 1, watch-hands 2, watch-pendants 1, watch-pinions 2, watch-springs 1, weavers 19, web 1, white metal smiths 562, wire-drawers 150, workers in copper and brass 34, workers in copper and steel 37. At *Aston:* makers of anvils 1, awl-blades 27, bellows 10, brass-founders 576, Britannia-metal 8, buckles 3, buttons 158, carpets 1, coffin furniture 15, edge-tools 24, fenders 38, files 33, frying-pans 8, gilt toys 16, gimlets 16, glass 132, hinges 34, latches 1, locksmiths 59, machines 3, malt-mills 6, needles and fish-hooks 5, pewterers 10, pins 4, planes 6, rulers 18, saws 19, screws (wood) 27, snuffers 6, spades and shovels 1, spoons 36, steel toys 120, steelyards and scale-beams 17, thimbles 17, thread 3, traps (mouse and rat) 3, vices 2, weavers 5, wire 87. At *Edgbaston:* brass-founders 8, makers of buttons 6, coach-springs 1, files 2, gimblets and braces 2, glass 3, buckles 2, iron 6, locksmiths 4, platers 7, polishers 2, press-nails 1, rollers of metal 2, screws 1, spectacles 1, spoons 2, vinegar and starch makers 3.

The situation of Birmingham is dry and salubrious. In a few departments the processes carried on are reckoned very unhealthy; but this is not generally the case; and, notwithstanding the immense number of furnaces, and the volumes of smoke which they emit, the town is not unhealthy.

The manufacturing district, of which Birmingham is the metropolis, includes a considerable tract to the north-west of the town, embracing the southern part of Staffordshire, with the extreme northern border of Worcestershire, and a detached part of Salop. Within this district are the populous towns of Dudley, Wolverhampton, Bilston, Walsall, Wednesbury, Stourbridge, &c. Exclusive of the production of iron, in which most of them are very largely engaged, different branches of the hardware manufacture are carried on in all these towns. The nail trade, which is, perhaps, the most important, is principally prosecuted in and round Dudley, Stourbridge, and Walsall. Many efforts have been made to supersede the labour of the hand in the making of nails, by constructing them wholly by means of machinery; and vast numbers are now made in this way that answer sufficiently well for various purposes. But the best of those made by machinery are still very inferior to those made at the common forge; which, in consequence, is still very extensively employed.

The art of making nails by the hand continues at present nearly in the state described by Hutton. "We cannot," says he, "consider it a trade *in* so much as *of* Birmingham; for we have but few nail-makers left in the town. Our nailers are chiefly masters, and rather opulent. The manufacturers are so scattered round the country that we cannot travel far, in any direction, out of the sound of the nail-hammer. When I first approached Birmingham from Walsall, in 1741, I was surprised at the prodigious number of blacksmiths' shops upon the road; and could not conceive how a country, though populous, could support so many people of the same occupation. In some of these shops I observed one or more females, stripped of their upper garment, and not overcharged with their lower, wielding the hammer with all the grace of the sex. The beauties of their face were rather eclipsed by the smut of the anvil. Struck with the novelty, I inquired 'whether the ladies in this country shoed horses?' but was answered, with a smile, 'They are nailers.'" — (P. 117.)

This employment is as poor as it is slavish and degrading. The wages obtained in it are very low, most probably from the circumstance of women and children being largely employed. At present it is supposed to occupy in all from 25,000 to 30,000 hands.

The manufacture of japan-ware is prosecuted on a large scale at Bilston and Wolverhampton. The latter has been long celebrated for the excellence of her locks; the general trade in which she almost exclusively enjoyed till a comparatively late period. At present, the more costly and best locks are made in the metropolis; and the lock trade is also carried on at Birmingham. But Wolverhampton still engrosses the largest share of the manufacture; and she has, also, large manufactures of brass and copper articles.

Saddlers' ironmongers are a class of manufacturers some of whom are found at Birmingham, but who chiefly reside in Walsall, Wolverhampton, and Wednesbury. They plate and prepare bridles and stirrups, with ornaments for coaches and coach-harness, &c. For cheapness in the common, and perfection in the best, of these articles, the district in question is unrivalled.

Sheffield, in the district of Hallamshire, in the West Riding of Yorkshire, is the next grand seat of the hardware manufacture. Nothing is known as to its early history, or the origin of that business for which it is now so famous. But it had attained to eminence in the making of knives so early as the 13th century; for Chaucer, who was contemporary with Edward III., mentions, in his "Reve's Tale," the Sheffield "thwytel," or whittle, in such a way as shows it was then in common use. It does not appear ever to have lost the reputation for cutlery it had thus early acquired. In 1575, the Earl of Shrewsbury, lord of the manor of Sheffield, sent to his friend Lord Burleigh "a case of Hallamshire whittels, beinge such fruites as his pore cuntrey affordeth *with fame throughout the realme.*" — (*Manufactures in Metal, Lardner's Cyclopædia,* vol. ii. p. 5.) In 1624 a corporation was formed for the "good order and government of the makers of knives, scissars, shears, sickles, and other cutlery-wares in Hallamshire;" the government being vested in a master, two wardens, six searchers, and 24 assistants, consisting of freemen only. The principal object in the formation of this corporation seems to have been the regulation of the marks or other devices which every individual was to strike or impress on the goods he made for sale. But these regulations can hardly be said to be any longer in existence.*

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* We may take this opportunity to observe that a considerable difference of opinion exists as to whether it would be expedient to enforce any general regulations with respect to marks; and the subject is involved in a good deal of difficulty. No one, indeed, can doubt for a moment the impolicy of attempting to interfere, in any manner of way, with the description of articles a person may choose to manufacture;

The corporation continued on the footing fixed in 1624 till 1814, when an act was passed permitting all persons indiscriminately, without their being freemen, or having served an apprenticeship, or obtained a mark from the corporation for their goods, to carry on business any where within the district of Hallamshire. This liberal and judicious measure has been of great service to the town, by inducing men of talent and enterprise, from all parts of the country, to settle in it, where their competition and industry have had the best effects.

For several centuries the manufactures of Sheffield were confined almost entirely to the making of sheath-knives, scissars, sickles, and scythes. About the beginning of the 17th century, a common tobacco-box and the Jew's-harp were added to the list of manufactured articles; but it was not till about forty years after that the manufacture of clasp-knives, razors, and files, for which it is now so famous, was introduced. It has been remarked that, for about a century after this period, the manufacturers of Sheffield discovered more of industry and perseverance than of enterprise or ingenuity in the conduct of their business. But about 1750 they began, for the first time to carry on a direct trade with the Continent. The manufacture of plated goods was soon after commenced; and, from that period down to the present time, Sheffield has made an astonishing progress in the career of industry; and in many branches of the hardware manufacture has no superior, and in some no rival. — (*Rees's Cyclopædia, Lewis's Topographical Dictionary, &c.*)

Like Birmingham, Sheffield was, most probably, indebted to her situation for her early application to the hardware business. Coal and iron are found in her immediate vicinity. The Don, on which Sheffield is built, supplies her with power to work mills for forging, cutting, and preparing the iron and steel used in her manufactures; and in this respect she has an advantage over Birmingham. The river was made navigable to within about 3 miles of the town so early as 1751; and a lateral canal has since prolonged the navigation to the town.

Cutlery, as it was the earliest, so it is still the largest and most important, branch of industry carried on in Sheffield. The principal articles are table-knives and forks, pen and pocket knives of every variety and description, scissars, razors, surgical, mathematical, and optical instruments, scythes, sickles, saws, with all sorts of carpenters' tools, and so forth. The most beautiful and highly finished articles of cutlery exhibited in the shops of the metropolis, though stamped with the vendor's name, are mostly all made here; and Sheffield cutlery is deservedly held in the highest estimation in all parts of the world.

With the exception of plated saddlery ware, almost all the other descriptions of plated goods made at Sheffield are reckoned superior to those made at Birmingham or any where else. Some of the best plated articles have silver edges; and, when used with ordinary care,

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but it would, at the same time, be very desirable could some means be devised that would make the public readily aware of the sort of articles they are buying. At all events, the practice of putting false marks on articles cannot be too much condemned. We do not object to knives being made of hammered-iron, cast-iron, &c.; but we do object to the practice of impressing such articles with the words "steel," "sheer steel," &c. This is practising a fraud upon the public, and inflicting an injury on such manufacturers as make similar articles of steel.

last for a very long time, and can with difficulty be distinguished from silver. We have already noticed the extensive manufacture of articles of Britannia metal carried on here.

Mr. Jacob says that, in as far as he was able to ascertain by inquiries of the platers, the owners of flatting-mills, and of the manufacturers of plated goods, he was disposed to estimate the silver used for plating in Birmingham and Sheffield, including with it that used at Walsall and other places, by saddlers' ironmongers, at about 750,000 oz. a year.—(Vol. ii. p. 298.) And deducting from this the 150,000 oz. used at Birmingham, and 100,000 oz. for that used at Walsall and other minor towns, there will remain 550,000 oz. for the consumption of Sheffield.

Few articles of copper and brass, and no toys, are made at Sheffield; but, in lieu of these, it has some peculiar and important businesses. The conversion of iron into steel is carried on to a far greater extent in it than in any other part of the empire; and most of the steel used at Birmingham and other places is prepared at Sheffield. The works of the Messrs. Sanderson, for the converting and preparing of steel by tilting, rolling, &c., are the most extensive and celebrated in the world.

The manufacture of files is one of the staple trades of Sheffield. Files are used in immense quantities at home, and are largely exported. Any one who has ever seen the process of file-cutting would be likely to conclude that it was an operation that might be successfully performed by machinery; and a great variety of contrivances have been set on foot in that view. Hitherto, however, none of them have completely succeeded; so that all the best files continue now, as heretofore, to be cut by the hand.

The town of Sheffield had, in 1831, a population of 59,011. The manufacture is not, however, confined to it, but is diffused over the whole parish, representing, though not quite identical with, the old Saxon manor of Hallam, or Hallamshire. The parish, which includes an area of 22,830 acres, lies mostly to the west of the town, and had, in 1831, a population of 91,692. The principal part, not only of the male, but also of the female part of the population, is engaged in the hardware trade. In 1833, some of the staple trades carried on in the town, and the individuals employed in them, were specified as follows:—Table-knives and forks 3,689 hands; pen and pocket-knives 2,680; razors 754; scissars 600; files 1,768; saws 563; edgetools 703; stove-grates, fenders, &c., 1,530; white metal 643; silver plated goods 500; making, in all, 13,430.* But the hands engaged in the conversion of iron into steel, and in several other important trades, are not included in this enumeration. Wages in Sheffield vary from about 15*s.* to 35*s.* and 40*s.* a week. The labour in some departments is very severe; and in others great skill is required.† Grinders, particularly those who do not use water in the operation, inhale the finer particles of stone and steel, and are generally short-lived. A good many attempts have been made to obviate this, as well as to lessen the risk of accident in the grinding-mills; but the employment continues to be more than ordinarily unhealthy and dangerous [*]; and, as much skill is required in the grinding of the finer descriptions of knives and razors, wages, being influenced by both circumstances, are generally high.

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* *Commons, Report, of* 1833, *on Manufactures, Commerce, and Shipping*; *Min. of Evidence*, p. 175.

† *Report, ubi suprà.*

Combinations have been very prevalent at Sheffield. Different opinions are entertained as to their influence on wages; but it seems pretty clear that, though they have kept up their nominal rate, they have effected this by lessening the hours of work, and keeping a considerable number of individuals out of employment; so that there is but little room for doubt that here, as every where else, they have been, on the whole, decidedly injurious to the workmen.

But few, comparatively, of the Sheffield manufacturers have large capitals; and the business is not so generally carried on in workshops or factories as in Birmingham. A person worth a few shillings may commence business on his own account as a cutler; and, in this class, individuals are not unfrequently journeymen one year and masters another, and conversely.

Exclusive of these two grand seats of the hardware manufacture, and of the districts subordinate to and connected with them, the business is carried on to a greater or less extent in many other places. Most part of the machinery used in the cotton and other factories is made at Manchester and other great centres of the trade. The wonderful progress of the manufacture has been mainly owing to the excellence and continued improvement of the machinery made use of: the preparation and repair of which employs a great number of hands, and a large amount of capital. The reputation of what are called "Lancashire tools" is very widely diffused. Under this designation are comprised files of the very best quality, chisels, gravers' tools, watch and clock makers' tools, hand vices, pincers, metal and wire gauzes, and an infinite variety of such like articles. Warrington is the centre of this trade; and in some of its factories may be seen collections of unrivalled excellence of the articles in question. The best watch-tools are, however, made at Prescott.

Besides tools, pins are largely manufactured at Warrington; and, this being an article of which the consumption is immense, they are, as formerly stated, manufactured in great quantities at Birmingham, and also at Sheffield, Gloucester, London, and other places. At Redditch, in Worcestershire, about 4,500 persons are employed in the manufacture of needles and fish-hooks; and the former are also made at Whitechapel, Hathersage, in Derbyshire, &c. Most descriptions of fire arms, including the finest fowling-pieces and pistols, are made in the metropolis. Cirencester, in Gloucestershire, furnishes curriers' knives of a peculiar and superior quality. Some of the finer descriptions of cutlery are produced, but only in small quantities, at Salisbury. A great deal of cutlery business is transacted in London; but, as already stated, most of the articles sold in it, though bearing the names of the vendors, are really made at Sheffield.

Cast-iron goods are produced at different places in Scotland; but the best known and most celebrated works are at Carron, in Stirlingshire. They were established in 1760; but have since been greatly enlarged. All kinds of cast-iron goods, whether for the purposes of war or peace, are made at Carron. Among the former may be included cannons of all sorts, mortars, bombs, &c., with shot and shells. The peculiar variety of cannon called a carronade derived its name from its being originally produced here. The domestic articles are too numerous to admit of enumeration; but stoves, grates, fenders, &c., constitute, perhaps, the largest item. There are many founderies in other parts of the country, particularly in Lanarkshire. Glasgow, like Manchester, has a large manufacture of steam-engines and other sorts of machinery.

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[*] *Manufactures in Metal.* — *Lardner's Cyclopædia*, vol. i. pp. 289—296.

The hardware manufacture can hardly be said to exist in Ireland.

Value of the Manufacture. — We regret that no materials exist, or are at all likely ever to be procured, for forming an accurate estimate of the total value of the hardware and cutlery annually produced in Great Britain. Mr. Stevenson estimated the annual value of all the articles made of iron in England and Wales, in 1814, at 10,000,000*l.*, and the persons employed in the trade at 200,000; those of brass and copper at 3,000,000*l.*, and the persons employed at 50,000; and the steel, plated, and hardware articles, including toys, at 4,000,000*l.*, and the persons employed at 70,000; making the total value of the goods 17,000,000*l.*, and the total persons employed 320,000.

We incline to think that this estimate is rather exaggerated. There has, no doubt, during the last 20 years, been a very extraordinary increase in the production of iron; and the rapid increase of Birmingham and Sheffield, as well as of the smaller seats of the hardware manufacture, shows that it has increased in at least a corresponding proportion. But, on the other hand, there has been, during the same period, a very heavy fall in the price of most articles; the reduction in several descriptions of goods having been from 50 to 60, 70, and even 80 per cent., and in few less than from 20 to 30 per cent. It is, therefore, doubtful whether, notwithstanding the great increase of the manufacture, its value at present materially exceeds its value in 1814. On the whole, if we might venture to conjecture on such a subject, we should say that the annual value of all sorts of iron, and hardware, and cutlery articles, produced in Great Britain, may be taken at about 17,000,000*l.*, and the persons employed at from 300,000 to 325,000.

Account of the Quantities of British Hardwares and Cutlery Exported from the United Kingdom in the Year 1836; specifying the Countries to which they were exported, and the Quantity and declared Value of the Exports to each.

Countries to which exported.	Quantity.				Declared Value.		
	T.	cwt.	q.	lbs.	*L.*	*s.*	*d.*
Russia - -	253	5	1	18	30,457	18	0
Sweden - -	16	3	0	19	2,092	11	7
Norway - -	44	8	0	11	4,089	16	8
Denmark - -	31	14	2	13	2,399	16	0
Prussia - -	44	4	0	20	3,310	11	0
Germany - -	522	5	2	14	68,443	3	6
Holland - -	279	0	1	22	36,221	17	0
Belgium - -	190	10	0	4	21,493	14	6
France - -	406	0	1	16	48,984	7	6
Portugal - -	193	6	3	21	24,346	12	0
Spain - -	117	17	1	7	15,596	8	0
Gibraltar - -	59	18	2	0	6,202	17	0
Italy - - -	297	4	3	4	39,966	18	0
Malta - -	27	4	3	0	3,540	15	0
Ionian Islands -	20	1	0	0	1,785	9	0
Morea and Greek Islands -	1	4	0	0	147	0	0
Turkey - -	45	2	0	0	7,027	15	0
Syria and Palestine		10	0	0	60	0	0
Asia - - -	1,022	6	0	2	129,963	17	11
Africa - -	410	10	2	0	35,170	3	0
British North American Colonies	1,244	0	3	24	130,586	9	0
British West Indies	1,214	5	1	3	115,017	14	1
Foreign West Indies	710	2	2	6	49,542	17	0
United States of America -	12,	12	1	4	1,318,411	18	0
Brazil - -	992	1	2	0	91,285	14	0
Mexico & the States of South America	810	13	3	14	76,305	6	0
Isles of Guernsey, Jersey, Alderney, and Man -	60	7	3	24	8,868	18	3
Total -	21,072	2	0	22	2,271,313	7	0

The exports of brass and copper manufactures, in 1836, amounted to 284,835 cwts., of the value of 1,072,344*l.* The East Indies, the United States, and France are the great markets for this description of articles.

Watches, Plate, Jewellery, &c. — Exclusive of the hardware and plated goods, referred to above, the manufacture of watches, and of solid gold and silver articles, is of much importance. Instead of a watch being the distinguishing appendage to a man of wealth and fashion, it has become the useful companion of all but the poorest and idlest of the community. Among even the middle ranks it has grown into use, not merely for the heads of the family, but few of the junior members, or even of the domestic servants, are without them. The increased number of watches, especially since it has been permitted to form the cases of gold and silver of a lower degree of fineness than our standard, has been such that they must be counted by millions.*

The separate parts of the mechanism of watches are now generally constructed by different sets of artists, mostly in Lancashire, on the principle of the division of labour; the delicate task of putting them together, and regulating their movements, being left to the watchmakers. The watchmaking business is principally carried on in London, especially in the parish of Clerkenwell, and to a lesser extent at Coventry, Liverpool, Edinburgh, and other places. At an average of the 3 years ending with 1829, there were annually assayed, at the Goldsmiths' Hall, London, 13,893 gold and 84,810 silver watches. — (*Jacob*, vol. ii. p. 413.) The metal in the gold watches is 18 carats fine, worth 3*l.* 5*s.* an ounce; and the weight of metal in each watch is about 2 ounces. At a medium, the gold watches may, it is believed, be worth about 15*l.* each, or 208,395*l.* in all: and, estimating the value of the silver watches at 6*l.* each, the value of those produced in the metropolis, during the same three years, will be 508,860*l.* a year; making, when added to the value of the gold watches, a total of 717,255*l.*, exclusive of plated and gilt watches, &c. The average number of gold watches assayed at Birmingham (but chiefly made at Coventry), Chester, and elsewhere, may be from 900 to 1,000 a year, worth 13*l.* each; and the silver watches made at Coventry, Liverpool, Edinburgh, and all other places, exclusive of London, varies from 135,000 to 145,000 a year (*Jacob*, vol. ii. p. 292. and p. 296.), worth, probably, 5*l.* each. On the whole, including the gilt and plated watches, &c., the value of those annually manufactured in great Britain may be moderately estimated at 1,500,000*l.* a year.

The different pieces of the mechanism of clocks, like those of watches, are made by different sets of workmen; and are put together by others, who, though mostly distinct from, are usually confounded with, watchmakers. It appears, from the population returns, that there were, in 1831, 8,892 males, of 20 years and upwards, employed as clock and watch makers in Great Britain, of whom 7,720 belonged to England, 228 to Wales, and 944 to Scotland. Of those belonging to England the metropolis had 2,633.

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* *Inquiry into the Production and Consumption of the Precious Metals*, by William Jacob, Esq. vol. ii. p. 209.

Exclusive of the gold used in gilding and in watchmaking, large quantities are annually wrought up into plate, trinkets, snuff-boxes, &c. The amount so disposed of has been estimated by Mr. Jacob at 58,000 ounces fine gold, worth 4*l.* 7*s.* 6*d.* an ounce, and 232,000 ounces standard gold, worth 3*l.* 17*s.* 10½*d.* an ounce, making together 290,000 ounces, worth, in all, 1,156,020*l.* — (Vol. ii. p. 292.) In the same work Mr. Jacob estimates the annual consumption of silver in the arts at 3,282,046 ounces, from which, deducting 900,000 ounces used in plating, and 506,740 used in watch-cases, there remain 1,875,306 ounces, worth 5*s.* an ounce, or 468,826*l.*, for all other purposes. — (Vol. ii. p. 299.) We suspect, however, that both these estimates, particularly the first, are exaggerated. It should also be observed, that a considerable quantity of the new plate, annually manufactured, is made out of old plate; and that the absolute consumption of the precious metals is, consequently, not nearly so great as these estimates would seem to infer.

London is the principal seat of the jewellery business. Next to it, but at a great distance, are Birmingham, Derby, Liverpool, and Chester. There are, also, manufacturers of gold and silver articles and jewellery at Newcastle, York, and Exeter, and at Edinburgh and Dublin. In 1830, of 6,441 ounces of gold plate produced in the empire, 5,458 paid duty in London, 827 in the rest of England, 68 in Scotland, and 88 in Ireland. During the same year there were manufactured 1,271,322 ounces of silver plate, of which 965,364 were made in London, 132,900 in the rest of England, 59,498 in Scotland, and 113,560 in Ireland. The jewellery business is believed to be distributed nearly in the same proportions. — (*Jacob*, vol. ii. p. 408.)

According to the population returns, there were in Great Britain, in 1831, 5,231 males, of 20 years and upwards, in the jewellery business, of whom England had 4,779, Wales 31, and Scotland 421. More than half the jewellers of England belong to the metropolis.

In London, the most costly articles of jewellery, contrary to what might, perhaps, have been anticipated, are devised and completely finished by the same persons; and, exclusive of the precious stones, which, in some of the ornamental products, are the chief cost, the greatest expenditure on them is the gold. That metal is rarely used in a pure state; though, in some of the more delicate parts, such as the filigree work, it is mixed with but a very small proportion of alloy. That commonly used, at least by the first-rate jewellers, is usually 16 carats fine, or with a third of alloy. The finer gold is supplied by the refiners; and amounts to about a fourth part of the other. The trade of a gold-beater used to be restricted to London, where it continues to be principally carried on; but it is now prosecuted on a smaller scale at Birmingham, Dublin, Glasgow, Edinburgh, Liverpool, and some other places.

The declared or real value of the plate, plated goods, and jewellery exported in 1836 amounted to 338,889*l.* The United States are the best market for this description of goods, and, next to them, India.

SECT. VII.—*Leather Manufacture.*

THE leather manufacture ranks either third or fourth among those carried on in the country, being inferior only, in point of value and extent, to those of cotton, wool, and iron, if it be not superior to the latter. Sir F. M. Eden, in his *Treatise on Insurance*, estimated the value of the different articles manufactured of leather, in 1803, at 12,000,000*l.*; and there is reason to think that this statement was not very wide of the mark. Besides the hides and skins produced at home vast quantities are imported. At an average of the years 1833 and and 1834, no fewer than 304,279 cwt., or 34,079,248 lbs., of foreign cow, ox, and buffalo hides were entered for home consumption, exclusive of vast quantities of lamb-skins, goat-skins, &c. The total quantity of all sorts of leather, tawed, tanned, dressed, and curried in Great Britain, may at present be estimated at about 65,000,000 lbs.; which, at 1*s.* 6*d.* per lb., gives 4,875,000*l.* as the value of the leather only. Now supposing, as is sometimes done, the value of the leather to amount to one third the value of the finished articles produced from it, that would show the value of the manufacture to be 14,625,000*l.* or 14,600,000*l.* We incline, however, to think that the value of manufactured leather articles does not amount, at an average, to three times the value of the raw material; and, therefore, we may, perhaps, estimate the entire value of the manufacture at 13,000,000*l.* or 13,500,000*l.* Now, supposing the smaller sum to be the more accurate, to get the number of persons employed, we have first to deduct from this sum of 13,000,000*l.* 4,875,000*l.* for the raw material, which leaves 8,125,000*l.* as the aggregate amount of profits, wages, &c.; and, setting aside 25 per cent. as profits, rent of workshops, capital invested, &c., we have a sum of 6,094,000*l.* remaining as wages. And, supposing those employed as shoe-makers, saddlers, glovers, &c., to make, one with another, 30*l.* a year, the total number of such persons will be 203,000.

This, however, does not give the total number of persons employed in the leather trade, inasmuch as it excludes the tanners curriers, &c. employed in dressing and preparing the leather. But if, from the value of the prepared leather, 4,875,000*l.*, we deduct 1,500,000*l.* for the value of the hides and skins, and 2,300,000*l.* for tanners' and curriers' profits, including the expense of bark, lime, pits, &c., we have 1,075,000*l.* left as wages. Now as the wages of curriers, tanners, leather-dressers, &c., may, we believe, be taken at 35*l.* a year at an average, we shall have 30,700 as the number employed in these departments; and, adding these to the persons employed in manufacturing the leather, we have a grand total of 233,700 employed in the various departments of the business.

Those who may be inclined to suspect these estimates of exaggeration would do well to reflect on the value of the shoes annually manufactured. It is generally supposed that the expenditure upon shoes may be taken, at an average of the whole population, at 10*s.* a year for each individual, young and old; which, taking the population at 17,500,000, would give 8,750,000*l.* for the value of shoes alone; but, taking the value of the shoes at 8*s.* only, it gives 7,000,000*l.* for the amount. Mr. Stevenson supposes (art. ENGLAND, *Edinburgh Encyclopædia*) that the value of saddlery, harness, gloves, &c., is at least equal to that of shoes; but we believe this to be too high, and have taken it at 1,000,000*l.* below the value of the shoes. In estimating the entire value of the manufacture at 13,000,000*l.*, we incline to think that we are as near the mark as it is easy to come in such investigations.

Distribution of the Manufacture. — *Tanneries.* — The business of tanning is very widely diffused. As was to be expected, the largest tanneries in the empire are in the vicinity of London, particularly at Bermondsey, in the Borough. The manufacture of what is called morocco leather, principally used by bookbinders, coachmakers, &c. is almost entirely confined to it. There are, also, extensive tanneries in the vicinity of most large towns, and at different places throughout the country. The capital required to carry on the business is very considerable; since, besides what is laid out on pits and buildings, &c., there must be sufficient to wait the returns, which are usually very slow. At present, however, hides can be prepared for sale in half the time that was formerly required; and this, as is said, not only without any injury to, but with an actual improvement of, the leather. Many experiments have been tried with different kinds of bark; but oak still continues, all things considered, to maintain its ancient pre-eminence: very large quantities of it are annually made use of.

Shoemaking. — According to the returns under the last census, there were, in 1831, a grand total of 133,248 males, of 20 years of age and upwards, employed in the shoemaking business in Great Britain: viz., in England 110,122, in Wales 5,819, and in Scotland 17,307. London is the principal seat of the business, having employed, in 1831, 16,502 shoemakers of the above age. Exclusive of the shoes made in London, large quantities are brought to its markets from Northamptonshire and Staffordshire, — counties in which the manufacture of shoes, over and above what is required for their own supply, is carried on to a very considerable extent. In Northampton, Wellington, Irthlingborough, Kettering, and other places in Northamptonshire, from 2,200 to 2,400 males, of 20 years and upwards, exclusive of large numbers of women and children, are employed in the manufacture of shoes for export to other parts of the country, and to foreign countries. — (*Population Returns.*) In the town of Stafford the manufacture employs about 800 men. It used, also, to be carried on to a considerable extent at Congleton and Sandbach, in Cheshire; but it has been superseded in the first by the manufacture of cotton, and in the latter by that of silk. Leather slippers are largely produced at Bicester, in Oxfordshire.

Saddles and Harness are made in every considerable town, and even village, in all parts of the empire; but the largest proportion, as well as the finest and best articles, are made in London. Of 11,280 males, of 20 years and upwards, employed in the manufacture of saddles and harness in Great Britain, in 1831, 1,558 belonged to the metropolis. The annual value of the exports of leather, wrought and unwrought (exclusive of saddlery), amounts to above 300,000*l.* The exports of saddlery are about 90,000*l.* a year. The West Indies and the British North American colonies are the principal markets for these articles.

Gloves. — The leather used in the manufacture of gloves is not, properly speaking, tanned, but prepared by a peculiar process that renders it soft and pliable. Some sorts of leather gloves admit of being washed, and others not. Woodstock and Worcester, but particularly the former, are celebrated for the manufacture of leather gloves of a superior quality, in which a great number of women and girls, as well as men, are employed. The produce of the Worcester manufacture has been estimated at about 42,000 dozen pairs of oil leather, or beaver, gloves, and 470,000 dozen pairs of kid and lamb-skin gloves; the value of the whole, when finished, being about 375,000*l*. Besides Worcester and Woodstock, Yeovil, London, Ludlow, and Leominster are the principal seats of the leather glove manufacture. Of these Yeovil is the most important. "The quantity of all sorts of gloves annually produced there may be estimated at about 300,000 dozen pairs; and the number of men, women, and children employed in the place, and the adjoining districts (spreading over 20 miles), amounts, perhaps, to 20,000. They are principally employed in making men and women's fine gloves, or those that pass in the shops under the denomination of kid-gloves, but which are really made from lamb-skins, imported from Italy, Spain, and Germany, and dressed at Yeovil." — (*Hull on the Glove Trade*, p. 69.) Gloves are sometimes sewed by machinery; but this is done only to improve the work, by rendering the stitches more correctly equidistant, as it is not cheaper than manual labour. Large quantities of cotton gloves are made at Nottingham and Leicester.

Influence of Repeal of Prohibition of Importation.—The importation of leather gloves and mitts was formerly prohibited, under the severest penalties. This prohibition, by preventing all competition and emulation with the foreigner, checked improvement, and rendered British gloves at once inferior in quality and high in price. This system was, however, permitted to continue till 1825, when the prohibition was repealed, and gloves allowed to be imported on payment of duties which, though high, are not prohibitory. This measure was vehemently opposed, and many predictions were made of the total ruin of the manufacture; but in this, as in every similar instance, experience has shown that the trade had not been really benefited, but that, on the contrary, it had been injured, by the prohibition. The wholesome competition to which the manufacturers now felt themselves, for the first time, exposed made them exert all their energies; and it is admitted, on all hands, that there has been a more rapid improvement in the manufacture during the last 10 years than in the previous half century. There is still, no doubt, a great deal of complaining of a decay of trade among the leather glove manufacturers; but we are assured that, if there be any real foundation for their complaints, it is ascribable more to the growing use of home-made cotton and silk gloves than to the increased importation of foreign leather gloves; and, had it not been for the improved fabric and greater cheapness of British leather gloves, that has grown out of the new system, it is abundantly certain that cotton gloves would have gained still more rapidly on them. In point of fact, however, it does not appear that there has been any falling off in the leather glove trade; on the contrary, the fair inference seems to be that it has increased: at all events, there has been a very considerable increase in the number of skins brought from abroad to be used in the manufacture, and, consequently, in the number of pairs of gloves produced from such skins; and there is no reason for thinking that it is at all different with the other departments.—(*Commercial Dictionary*, art. GLOVES.)

ACCOUNT of the Gloves imported during the six Years ending with 1835.

	1830.	1831.	1832.	1833.	1834.	1835.
Gloves imported, pairs - -	1,093,521	1,196,465	1,516,632	1,436,472	1,697,944	1,260,59[illegible]
Whereof from France - -	1,067,196	1,169,377	1,513,106	1,422,634	1,657,967	——

N. B.—For accounts of the lamb, kid, and other skins, imported, exported, and entered for consumption in 1833 and 1834, see the Table of Imports in those years, *post.*

SECT. VIII. *Manufactures of Earthenware and Glass.*

1. *Earthenware.*—The manufacture of earthenware, or, as it is frequently called, stoneware, is of considerable value and importance. It is carried on in several parts of the country; but its principal seat is in the district called, by way of distinction, "The Potteries," in the north-west part of Staffordshire, having the town of Burslem in its centre. It is doubtful when the manufacture was originally established here; but it has certainly been prosecuted at Burslem for at least two centuries. The district has great natural capabilities for the successful prosecution of the business. The upper strata present, in almost every part, a great variety of clays, covering vast beds of excellent coal, which, being situated near the surface, are, in general, easily wrought. But, notwithstanding these capabilities, the manufacture was long in a very backward state. Dr. Plot, whose *Natural History of Staffordshire* was published in 1686, gives what is believed to have been a very accurate account of the manufacture at that time. The wares were then of the coarsest and commonest sort, and consisted principally of pots for the preservation of butter, whence Burslem is, in several old maps, marked by the name of "Butter Pottery!" Plot says that the wares were "chiefly sold to the poor crate-men, who carried them at their backs all over the country."—(*Nat. Hist. of Staffordshire*, cap. 3. § 29.) About the year 1690 some improvements were introduced into the manufacture by two foreigners of the name of Ellers. Superior clays were also brought from Dorset and Devonshire; and the fabric of the ware was improved by the addition of pounded flints, &c. Still, however, British earthenware was very inferior in beauty to that of France, which was, consequently, imported in considerable quantities, and was almost the only thing made use of by the more opulent class of customers.

It was not till about the year 1760, or 1762, that the grand æra of improvement commenced in the potteries. We are indebted for it to the exertions and example of Mr. Josiah Wedgwood, who did for the manufacture of earthenware what Arkwright did for that of cotton. This eminent individual was the youngest son of a potter, was very indifferently educated, and received but little property from his father. But these untoward circumstances, far from repressing, served rather to stimulate, the native vigour of his mind. His original and inventive genius enabled him to make many important discoveries, while his practical acquaintance with the business gave him the means of successfully introducing them into practice. Besides improving the composition, the glaze, and the colours of the old wares, he invented several that were altogether new; and (which was least to be expected from a person in his situation) he made vast improvements upon the figure of the articles manufactured, displaying in their formation a degree of classical elegance, and purity of design, which materially improved the national taste, and has never been surpassed. In addition to this, Mr. Wedgwood successfully exerted himself to improve the communications with the potteries; and was mainly instrumental in carrying the act for the Trent and Mersey canal through parliament, and in accomplishing that grand undertaking. The village of Etruria, where his works were situated, was built by him. Since his death, which took place in 1795, they have been carried on by his descendants.*

The inventions and discoveries of Mr. Wedgwood were soon universally introduced; and the manufacture has since continued gradually to extend and to improve. Its progress, we are assured, has been such, that a workman at the present day can, in a given time, produce about *four* times the quantity of manufactured articles he could have done in 1790!

Exclusive of earthenware, chinaware is also extensively manufactured in the pottery district.

Certain descriptions of earthenware are produced, in a considerable quantity, and of excellent quality, at Lambeth, and the same and other descriptions in other parts of the country. Chinaware is made at Worcester, Derby, Colebrook Dale, Rotherham, &c. It is estimated that the value of the various sorts of earthenware produced at the potteries may amount to about 1,500,000*l.* or 1,600,000*l.* a year; and that the earthenware produced at Worcester, Derby, and other parts of the country may amount to about 750,000*l.* more; making the whole value of the manufacture 2,250,000*l.* or 2,350,000*l.* a year. The consumption of gold for gilding, &c., at the potteries, is about 650*l.* a week, and of coal about 8,000 tons a week. — (*Commercial Dictionary*, art. EARTHENWARE.)

The finer sorts of clay used in the potteries are principally brought from the Isle of Purbeck, in Dorsetshire, and from Devonshire; steatites or soapstone is brought from Cornwall; large quantities of flints from Kent, and some from Wales, Ireland, &c. The canals by which Staffordshire is intersected, and which unite the potteries with all the principal ports of the kingdom, afford the greatest facilities for the conveyance of the raw materials used in the manufacture, and for the easy distribution of the wares to the great markets at home and abroad.

The population of the pottery district, which is naturally poor and barren, is exceedingly dense. It comprises from 60,000 to 70,000 inhabitants. The principal places are Burslem, Shelton, Longton, Stoke-upon-Trent, Henley, Tunstall, Lane-End, Etruria, &c. But several of these are now joined together; and, to a stranger, the entire district has the appearance of a large straggling town. A very large proportion of the population is employed in, and a still greater is dependent for support on, the manufacture. With the exception of gold, most of the materials made use of are worth very little; so that the value of the finished articles, as well as their exquisite beauty, and aptitude to every purpose of utility and ornament, is mainly ascribable to the skill and labour expended upon them. The wives and children of the workmen are usually employed; and, though they work together in factories, yet, as they reside in separate cottages, the manufacture partakes largely of the domestic character. The wages of a whole family amount to a very considerable sum. "The noxious process of glazing, so injurious to the health of those employed, has been rendered nearly free from its deleterious effects by the substitution of boracic acid for lead, which was formerly used in the proportion of 100 per cent., but now only of 8 per cent. The people employed in that branch were, formerly, not admissible into clubs, and were considered as degraded objects, from the insalubrity of their employment; but they are now gladly received into their benefit societies.—(1st *Factory Report*, B 2. p. 78.) On the whole, the work-people have a healthy comfortable appearance. The population of the new parliamentary borough of Stoke, comprising the principal places in the potteries, is about 57,000; and of this number 12,997 were, in 1833, attendant upon sunday schools.

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* See *Aikin's Description of the Country round Manchester*, p. 528; and the *Supplement* to his *Biographical Dictionary*, art. WEDGWOOD.

Owing to its extreme cheapness, excellent cream and blue coloured stoneware is now found in every cottage; and it has every where superseded, not only the old, ill-glazed, clumsy Delft-ware, but also pewter-plates, and the greater part of the wooden dishes that were formerly used in the kitchen and the dairy. It is not easy to over-rate the influence of this change in diffusing a taste for cleanliness, and for increased comforts and conveniences. Nor have its advantages been confined to this country. It is now widely spread over all parts of the world; the annual value of the exported articles having, in 1836, exceeded 800,000*l.* Formerly, as we have seen, we imported large quantities of stoneware from France, and, at a previous period, from the Dutch potteries at Delft; but the produce of our own potteries is now every where held in the highest estimation. An intelligent foreigner, M. Faujas de St. Fond, when noticing the English earthenware, observes, "Its excellent workmanship, its solidity, the advantage which it possesses of sustaining the action of fire, its fine glaze, impenetrable to acids, the beauty and convenience of its form, and the cheapness of its price, have given rise to a commerce so active and universal that, in travelling from Paris to Petersburgh, from Amsterdam to the extremity of the South of France, one is served at every inn upon English ware. Spain, Portugal, and Italy are supplied with it; and vessels are loaded with it for the East Indies, the West Indies, and the continent of America." — (*Travels in England*, Eng. trans. vol. i. p. 97.)

2. *Glass.* — The manufacture of glass is alike interesting and important, — interesting from the worthlessness of the materials out of which so beautiful an article is made, and important from the extreme utility of glass as ministering, in a high degree, to our comfort, and to the promotion of scientific investigations. The art is said to have been early introduced into this country; but, if so, it was a for long time but little practised. In the latter part of the 16th century, glazed

windows were luxuries all but unknown, even in the castles of the principal nobility of England *; and in Scotland, in the early part of the last century, glass was but seldom seen in the windows of country-houses.† The second duke of Buckingham materially improved the manufacture of British glass by bringing workmen from Venice, which had long taken the lead in this beautiful art. The manufacture was still further improved by the arrival of the French refugees, subsequently to the revocation of the edict of Nantes; and we began soon after to export considerable quantities of glass bottles.

The year 1773 is an era of some importance in the history of the British glass manufacture, inasmuch as a company for the production of plate-glass was then incorporated by act of parliament. This company erected extensive works at Ravenhead, near St. Helen's, Lancashire. The manufacture was at first conducted by workmen brought from France, whence we had previously imported our plate-glass. The first company, being unsuccessful, was succeeded by another in 1794. And, for these many years past, glass plates have been produced at these works that will bear a comparison with any made in any other country. About 20 years ago, another company for the manufacture of plate-glass was established at Newcastle; and these are the only establishments for its manufacture in the empire. The competition of the latter company would appear to have been not a little advantageous to the public; the price of plate-glass having been reduced, since its formation, about 50 per cent. below its previous level.

Next to bottle or green glass, crown and broad glass, being that which is commonly used in the glazing of windows, is produced in the greatest quantity. Flint or crystal glass is the purest and most brilliant of all. It is the material out of which drinking-glasses, decanters, chandeliers, and most domestic articles, whether for use or ornament, are usually manufactured. Plate-glass is principally employed in the making of mirrors, in coach and shop windows, the glazing of prints, &c.

Distribution of the Manufacture. — Newcastle and South Shields are, beyond all comparison, the principal seats of the manufacture of crown and bottle glass; the duty paid on the glass manufactured in them, in 1832, being nearly equal to half the whole duty collected in England. The largest manufactory of crown glass in the empire is that of Messrs. Chance and Hartley, near Birmingham: and there are considerable manufactories of flint and other descriptions of glass there, and at Dudley, Stourbridge, &c., being situated, some in the Lichfield, and some in the Stourbridge collection. The manufacture is also carried on to a very considerable extent in Liverpool‡, Bristol, and Warrington; and, to a less extent, in Leeds, Manchester, and London. In Scotland the manufacture is principally carried on at Dunbarton, Glasgow, Leith, Haddington, and Ayr. The Irish manufacture is but of trifling importance. Its principal seats are Dublin,

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* *Northumberland Household Book*, xvii.

† Ray, in his *Itinerary* (p. 187), mentions that, in Scotland, in 1661, glass was only used in the upper parts even of the windows of the king's palaces.

‡ The works at Ravenhead and St. Helen's are included in the Liverpool collection.

Cork, Lisburn, and Waterford. The total gross revenue derived from the glass duties, in 1837, was 903,856*l.* 12*s.* 10*d.**; of which England produced 837,277*l.* 14*s.* 9*d.*, Scotland 56,220*l.* 4*s.* 11*d.*, and Ireland 10,378*l.* 13*s.* 2*d.*

Value of the Manufacture.—It is difficult to form any estimate of the value of the glass annually produced in the United Kingdom. We believe, however, that it may be taken at about 2,000,000*l.*, and the workmen at about 50,000.

Duties on Glass.—An excise duty was imposed on glass in 1746. When first laid on the duties were comparatively moderate; but for a lengthened period they have been oppresive in amount, and necessarily, perhaps, assessed in a way that interferes with the free action of the manufacturer, obliges him to adopt a routine system, and lays the foundation for the greatest frauds. It appears from the tables printed by the Commissioners of Excise Inquiry, in their elaborate and valuable report on glass, that at an average of the 3 years ending with 1777, when the duty on flint and plate glass was 9*s.* 4*d.* a cwt., it produced 64,188*l.* a year. During the 3 years ending with 1824 the duty was 98*s.* a cwt., or more than *ten* times what it had formerly been! Hence, had the consumption not been affected by this enormous increase, the revenue derived from flint-glass, during the last triennial period, ought to have been more than ten times as great as that derived from it during the former. But instead of being, as it should have been on this hypothesis, 641,880*l.* a year, the duty actually received during the 3 years ending with 1824, was only 289,442*l.* a year, showing that *the consumption had declined a good deal more than a half during the interval!* But, in point of fact, the consumption had declined to a *fourth part* of what it certainly would have been but for the enormous increase of the duty. During the period in question, the population of England and Wales had increased from about 7,500,000 to about 13,000,000, while their wealth was more than trebled, perhaps quadrupled. Instead, therefore, of the consumption of flint-glass having declined more than a half, in the interval between 1777 and 1824, it would, but for fiscal rapacity, have been a good deal more than doubled. The vast improvement in the style of living, and the universal desire to possess massive crystal articles, render this all but absolutely certain. In 1825 the duties on flint-glass were reduced; but the reduction was quite inadequate; and the Commissioners of Inquiry stated in their Report that, "unless some material change shall take place in the amount and mode of charging the duty, the revenue from flint glass must be, in a great degree, sacrificed; and the persons who carry on the manufacture *under the regulations, and subject to the duties, prescribed by law* must either be driven out of the trade, or left to carry it on at a ruinous loss." This representation could not be disregarded, and the duty was last session (1835) reduced, and some alterations made in the mode of charging it.

This reduction will, no doubt, be a material relief to the manufacturers of flint-glass. Still, however, it is very far from being such as the trade and the public had a right to expect. Neither is flint glass the only article that has suffered from the exorbitancy of the duties. In 1777, when the duty on bottle glass was 2*s.* a cwt., it produced 28,995*l.* In 1834, the duty being 7*s.*, it ought, supposing our population and wealth had been stationary during the intervening *fifty-seven* years, to have produced *three and a half* times as much, or 101,482*l.*; whereas, in point of fact, it only produced 98,357*l.* 10*s.* Hence it follows that, by dint of exorbitant duties, *fourteen and a half millions* of Englishmen consumed fewer bottles in 1834 than *seven millions and a half* did in 1777!

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* This account differs in some degree from that which is subjoined. We are unable to explain the discrepancy; both being taken from the official returns printed in the Report of the Commissioners of Excise Inquiry on Glass.

Crown-glass, or that which is used in windows, is the only article that has been able to make head against the exorbitancy of the duties. A person may contrive to get on without a bottle, or a cut crystal wine-glass or decanter, but glazed windows, of some sort or other, are indispensable; and hence the duty, which has been increased, since 1778, from 14*s.* a cwt. to 73*s.* 6*d.*, has not diminished the consumption, though there can be no question that it has confined it within comparatively narrow limits, and made many content themselves with few, and those, too, small windows, who would have used more and larger, had the duty been more moderate, and glass been, consequently, cheaper.

But their oppressiveness is not the only objectionable feature of the glass-duties. Considerable quantities of glass are exported; but this trade could not be carried on unless a drawback proportioned to the duties were allowed to the exporters; and the extreme difficulty, or, rather, impossibility, of making the drawback the fair equivalent of the duty imposed opens a wide door for every sort of fraud. In 1837 the gross duty on glass amounted to 903,857*l.*; but of this nearly a third, or 293,737*l.*, were drawn back on exportation! And we need not dwell on the folly of collecting an oppressive tax at an immense expense from the manufacturer of an article, and then giving back the third part of it, not to them, but to the exporters of the taxed article.

The entire produce of the glass-duties, drawbacks deducted, in the United Kingdom, in 1837, amounted to 610,120*l.*; and deducting from this sum the expenses of collection, which are very heavy, we get the *nett revenue* applicable to public purposes. It cannot amount to 600,000*l.* a year. Now surely it cannot be said that, for the sake of a paltry sum of this sort, we must depress, and all but ruin, an interesting and important manufacture, capable of an indefinite extension, by burdening it with vexatious, unequal, and oppressive duties. Had the glass-duties produced 1,500,000*l.* or 2,000,000*l.* a year, their retention might have been excused by the impossibility of sacrificing, and the difficulty of replacing, so large a sum; but the revenue which they yield might be easily dispensed with. It is believed that about 50,000 persons are at present employed in the glass manufacture. Were the duty repealed this number would certainly be increased to 100,000; and the revenue would gain more by their expenditure than ever it can gain by keeping up the existing duties. The Commissioners of Excise Inquiry, after examining minutely and carefully into the whole subject, conclude their report by "urging the expediency of the repeal of the duty at the earliest possible period; and by expressing our conviction, that *no tax can combine more objections, or be more at variance with all sound principles of taxation, than this duty on glass.*"

Account of the Quantities of Flint, Plate, Broad, Crown, and Bottle Glass charged with Duty in each Year, from 1829 to 1834 respectively, with the Rates of Duty, and the Gross and Nett Revenue, accruing thereon.

Years	Flint Glass.	Rate of Duty.	Plate	Rate of Duty.	Broad.	Rate of Duty.	Crown.	Rate of Duty.	Bottle Glass.	Rate of Duty.	Gross Duty.		Drawback.		Nett Revenue	
	Cwt.	s.	Cwt.	s.	Cwt.	s.	Cwt.	s. d.	Cwt.	s.	L.	s.	L.	s.	L.	s.
1829	79,250	56	14,484	60	6,864	30	114,862	73 6	382,894	7	831,809	18	224,794	17	607,015	1
1830	72,942	-	13,301	-	4,845	-	96,865	-	340,793	-	725,597	1	182,678	4	542,918	16
1831	75,619	-	15,067	-	5,915	-	100,086	-	293,868	-	736,512	0	204,152	2	532,359	18
1832	75,771	-	12,270	-	5,304	-	103,902	-	316,282	-	748,097	3	186,565	7	558,531	16
1833	78,390	-	14,501	-	6,306	-	129,984	-	323,201	-	863,353	5	219,104	18	644,248	7
1834	83,328	-	18,922	-	6,766	-	136,708	-	344,017	-	905,066	6	261,305	5	643,751	1

Account of the Exports of Earthenware and Glass in 1833 and 1834, specifying the Quantity and Value of those sent to each Country.

Countries.	EARTHENWARE.				GLASS.					
	1833.		1834.		1833.			1834.		
	Quantities.	Declared Value.	Quantities.	Declared Value.	Entered by Weight.		At Value.	Entered by Weight.		At Value.
					Quantities.	Declared Value.	Declared Value.	Quantities.	Declared Value.	Declared Value.
	Pieces.	L.	Pieces.	L.	Cwts.	L.	L.	Cwts.	L.	L.
Russia - - -	117,971	1,311	80,138	1,037	349	553	60	2,076	2,319	
Sweden - - -	25,499	265	59,770	604	5,879	4,033	- -	4,022	3,109	
Norway - - -	453,551	3,525	479,352	3,594	57	250	3	21	96	
Denmark - - -	758,675	6,515	742,700	6,381	786	4,161	- -	1,067	4,597	
Prussia - - -	93,552	934	48,619	487	327	1,321	- -	581	2,002	
Germany - - -	1,053,411	15,236	1,658,169	15,097	6,220	10,774	10	2,494	10,943	745
Holland - - -	2,242,600	20,067	2,862,018	24,478	750	4,732	220	996	5,889	319
Belgium - - -	1,463,384	8,485	1,042,563	7,137	210	463	60	40	226	11
France - - -	90,150	1,920	119,092	4,315	684	864	- -	1,328	2,024	17
Portugal Proper - -	218,173	2,417	308,882	4,392	4,275	8,104	- -	10,795	7,301	104
Azores - -	74,426	929	109,300	1,165	87	838	12	277	779	3
Madeira - -	29,592	594	24,450	364	326	353	15	704	1,032	20
Spain and the Balearic Islands	430,770	4,606	579,500	4,511	312	783	15	217	377	5
Canaries - -	60,300	676	72,850	627	17	21	10	65	140	13
Gibraltar - - -	233,393	2,585	231,354	2,457	963	1,893	- -	874	2,073	1
Italy and the Italian Islands	839,125	12,449	1,039,210	13,135	724	2,311	70	452	1,893	12
Malta - - -	703,370	4,036	204,692	2,860	688	1,013	- -	1,005	1,388	54
Ionian Islands - -	99,156	1,121	111,421	1,395	334	451	16	1,122	999	15
Turkey and Continental Greece (exclusive of the Morea) -	469,234	5,317	455,052	6,274	1,056	1,284	- -	858	1,107	50
Morea and Greek Islands -	1,600	20	2,500	28	- -	- -	- -	17	27	
Egypt (Ports of the Mediterranean) - - -	62,780	813	51,147	702	327	600	- -	114	145	
Tripoli, Barbary, and Morocco	- -	- -	25,400	209	26	26	- -	- -	- -	13
Western Coast of Africa -	449,014	4,461	426,844	4,846	1,354	2,179	504	1,416	2,437	254
Cape of Good Hope - -	919,385	8,094	266,410	3,671	4,895	14,053	318	3,209	7,186	788
Cape Verd Islands - -	1,500	2								
St. Helena - - -	29,400	343	21,000	231	304	954	12	560	915	20
Mauritius - - -	180,006	2,100	140,700	2,074	- -	- -	- -	6	86	
Isle of Bourbon - -	- -	- -	5,000	61	1,954	2,124	52	1,396	1,898	30
East India Company's Territories and Ceylon - - China - - -	1,336,773	18,719	1,126,170	16,326	47,605	81,977	3,067	34,738	72,693	4,309
			12,000	158				1,076	2,424	160
Sumatra and Java - -	247,345	3,473	738,621	6,590	1,144	4,611	70	267	716	
Philippine Islands - -	- -	- -	103,200	1,031	311	341	- -	892	5,231	
New South Wales, Van Diemen's Land, and Swan River	872,811	10,349	973,362	12,110	12,725	23,163	1,007	13,890	35,769	2,012
New Zealand and South Sea Islands - - -	- -	- -	- -	- -	27	70				
Ports of Siam - -	- -	- -	16,000	250	- -	- -	- -	129	1,452	
British North American Colonies - - -	2,202,943	27,445	1,638,066	21,278	20,676	81,229	521	19,408	90,441	326
British West Indies - -	2,190,663	24,845	2,180,017	23,017	21,962	39,595	1,181	25,791	52,412	1,173
Hayti - - -	681,875	7,165	745,680	8,240	1,041	2,058	- -	1,038	2,222	
Cuba and other Foreign West Indies - - -	1,932,096	17,642	2,572,114	23,968	5,320	8,676	3	6,033	13,387	
United States of America	20,073,886	221,661	15,800,204	198,901	33,670	83,050	1,275	31,060	95,536	754
Mexico - - -	262,165	3,969	426,749	6,165	705	1,308	- -	344	728	80
Guatemala - - -	- -	- -	30,000	528	- -	- -	- -	232	850	
Columbia - - -	133,924	1,435	268,228	2,905	179	564	492	453	779	32
Brazil - - -	2,950,156	27,469	4,416,187	36,168	11,616	22,371	23	17,883	27,932	92
States of the Rio de la Plata -	770,172	9,377	523,161	5,762	3,198	9,737	100	2,156	4,929	60
Chili - - -	332,732	4,859	528,562	8,017	733	2,492	40	1,403	3,392	260
Peru - - -	313,780	5,226	388,630	5,569	1,320	3,736	- -	1,037	4,066	28
Isles of Guernsey, Jersey, Alderney, and Man - -	357,303	4,506	371,650	4,259	4,080	6,259	85	5,489	8,749	416
Total -	46,258,549	496,963	44,015,623	493,382	199,125	436,604	9,241	199,051	484,696	12,176

For accounts as to the manufacture of glass, in 1835 and 1836, see *Revenue*, art. " Excise." — The value of the earthenware exported in 1836, amounted to 837,774*l.*, and of glass to 553,384*l.*

SECT. IX. *Paper Manufacture.*

THE application of paper to the purposes of writing and printing, and the fact of its being indispensable to the prosecution of the latter, render its manufacture of the highest utility and importance. But, even in a commercial point of view, its value is very considerable. France, Holland, and Genoa had, for a lengthened period, a decided superiority in this department. The finest and best paper being made of linen rags, its quality may be supposed to depend, in a considerable degree, on the sort of linen usually worn in the country where it is manufactured; and this circumstance is said to account for the greater whiteness of the Dutch and Belgian papers as compared with those of the French and Italians, and still more of the Germans. The rags used in the manufacture of writing-paper in Great Britain are collected at home; but those used in the manufacture of the best printing-paper are imported principally from Italy, Hamburgh, and the Austrian states, by way of Trieste.

We believe, however, that it was owing rather to the want of skill than, as has sometimes been supposed, to the inferior quality of the linen of this country, that the manufacture of paper was not carried on with much success in England till a comparatively recent period. During the 17th century most part of our supply was imported from the continent, especially from France. The manufacture is said to have been considerably improved by the French refugees who fled to this country in 1685. But it is distinctly stated in the *British Merchant* (vol. ii. p. 266.), that hardly any sort of paper, except brown, was made here previously to the Revolution. In 1690, however, the manufacture of white paper was attempted; and, within a few years, most branches were much improved. In 1721 it is supposed that there were about 300,000 reams of paper annually produced in Great Britain, which was equal to about two thirds of the whole consumption. In 1783 the value of the paper annually manufactured was estimated at 780,000*l.* At present, besides making a sufficient quantity of most sorts of paper for our own use, we annually export about 100,000*l.* worth of books. We still, however, continue to import certain descriptions of paper for engravings from France, and a small supply of paper-hangings. The duty on both amounts to about 2,800*l.* a year.

In 1813, Dr. Colquhoun estimated the value of paper annually produced in Great Britain at 2,000,000*l.*; but Mr. Stevenson, an incomparably better authority upon such subjects, estimated it at only half this sum. From information obtained from those engaged in the trade, we incline to think that the total annual value of the paper manufacture in the United Kingdom, exclusive of the duty, may at present amount to about 1,200,000*l.* or 1,300,000*l.* There are about 700 paper-mills in England, and from 70 to 80 in Scotland. The number in Ireland is but inconsiderable. About 27,000 individuals are supposed to be directly engaged in the trade; and, besides the workmen employed in the mills, the paper manufacture creates a considerable demand for the labour of millwrights, machinists, smiths, carpenters, iron and brass-founders, wire-workers, woollen manufacturers, and others, in the machinery and apparatus of the mills. Some parts of these are very powerful, and subject to severe strain; and other parts are complicated and delicate, and require continual renovation. Owing to this, the manufacture is of much greater importance, as a source of employment, than might at first be supposed, or than it would seem to be considered by government, who have loaded it with an excise duty amounting to more than three times as much as the total wages of the work-people employed!

The modern discoveries in chemical science have not only materially facilitated the manufacture, but have greatly enlarged the supply of materials from which paper may be made. Until within these few years the refuse and sweepings of cotton-mills, owing to the grease and dirt with which they are mixed up, were of no value whatever, except as manure. But, means having been discovered of purifying them, they are now made into very good paper; and the neighbourhood of Manchester has, in consequence, become a principal seat of the manufacture. During the present century, so remarkable for improvements in the arts, this manufacture has been signally promoted, notwithstanding the excise regulations, by the application of machinery to the conversion of pulp into paper. The first idea of this originated in France. A model of the machinery was brought to this country by M. Didot, which, though very far from giving assurance of success, was yet sufficient to induce English capitalists and engineers, particularly Mr. Donkin, to follow up the scheme; and, in the course of a few years, they have brought it to a high degree of perfection. Mr. Dickinson of Hertfordshire, one of the most intelligent mechanists and the most extensive paper manufacturer in England, has invented a machine of a different construction for the same purpose, and has also introduced various subsidiary improvements into the manufacture. The result is all but miraculous. By the agency of a great deal of complicated machinery, so admirably contrived as to produce the intended effect with unerring precision, and in the very best manner, a process which, in the old system of paper-making, occupied about three weeks is performed in as many minutes! A continuous stream of fluid pulp is, within this brief space of time, and the short distance of thirty feet, not only made into paper, but actually dried, polished, and every separate sheet cut round the edges, and rendered completely ready for use! The paper manufactured by this wonderful combination of intelligence and power is at once moderate in price, and, for most purposes, superior in quality to that which was formerly made by hand. Mr. Dickinson has very recently made an important improvement in the paper manufacture, on the principle of veneering in cabinet-work. He makes two webs of paper, each by a separate process, and, by laying them together while in an early stage, they are rendered inseparable by the pressure to which they are subjected. This paper is used in copper-plate printing; and by adopting a peculiar method of preparing the pulp, and selecting a finer rag for the web which forms the face of the paper, it is much better calculated for taking a fine impression. This admirable invention has put nearly a total stop to the importation of French paper, which was formerly used in considerable quantities by copper-plate printers.—(*Commercial Dictionary*, art. PAPER.)

Duties.—An excise duty was imposed on paper so early as 1711, which, after many fluctuations, was fixed, in 1803, as follows: viz., first class paper 3*d.* per lb.; second class paper, or that "made of old ropes or cordage only," 1½*d.* per lb.: there were also duties on mill-board and paste-board. A drawback is allowed on the exportation of paper, of the full amount of these duties, and they are also remitted on the paper used in the printing of bibles. The nett produce of the duties amounts at present to about 700,000*l.* a year.

The duty was justly objected to as being oppressive in amount, and as imposed on a principle that necessarily occasioned a great deal of injustice, and gave birth to much fraud. On the finer sorts of writing-paper the duty was no less than 40 per cent., and on the inferior sorts of wrapping-paper it amounted to 200 per cent. Such a duty must obviously have been a great discouragement to literature; and, besides its magnitude, it operated unfairly and unjustly on authors and publishers, subjecting them to burdens from which all other classes of producers are exempted. The duties on the paper used in the printing of books have to be paid before the paper is sent to press, and, consequently, whether the book sell or not. When a book sells well, the duty may be only a reasonable deduction from the profits of the author and publisher; but when, as is actually the case with the greater number of works printed, the book does not sell to any considerable extent, and in many instances does not even defray its expenses, the duty becomes most oppressive; and, instead of being a reasonable deduction from their profits, has to be either partially or wholly defrayed out of the capital of those engaged in bringing it out.

As it would be quite impracticable to put booksellers under the control of the excise, and to charge the duty only on the copies of works sold at a remunerating price, it will, we apprehend, be impossible to get rid of this injustice otherwise than by abolishing the duty. But, though not wholly obviated, it has been very materially mitigated by the reduction of the duty on first-class paper to half its former amount. This reduction was strongly recommended by the Commissioners of Excise Inquiry, and has been adopted. It will be a great relief to the printers and publishers of the smaller and cheaper class of periodical publications; while, owing to the increase of consumption it will certainly occasion, it may be doubted whether the revenue will, in the end, lose any thing; perhaps it will be augmented. If a great sacrifice of revenue had been incurred, the case would have been different. But it was not to be endured that an important manufacture should be depressed and injured by oppressive duties, when it was all but certain that nothing, or next to nothing, would be lost by their modification.

The commissioners further recommended that the distinction between first and second class paper should be abolished, and that all paper should be subjected to the same duty of 1½*d.* per lb. Of the wisdom of this recommendation no doubt could be entertained. Formerly second class paper was made "*out of old ropes or cordage, without separating or extracting the pitch or tar,*" and from nothing else whatever! But many sorts of articles, now used as substitutes for rags in the making of paper, may be bought for a half or a third of the price of old ropes; and it was sufficiently established that they were very largely employed by many of the manufacturers of second class paper. Nothing, indeed, could be more absurd, more completely opposed to all sound principle, than to attempt to prevent the manufacturer from using the cheapest materials; and though it were otherwise, it was not possible to enforce the regulation. It was, in fact, obeyed by those only who chose to respect the law, and might, with little difficulty, be evaded by all who did not. "The improvements," say the Commissioners, "in the machinery and processes employed in the preparation of all kinds of paper, and especially the improved maceration of the pulp in the vats or engines, renders it extremely difficult to distinguish the nature of the original materials; and, at the same time, the means of identifying the second class paper by the smell of tar remaining in the old ropes has been entirely defeated, through the application of a process by which, though the letter of the law is adhered to, in not extracting the substance of the tar, the intention is defeated by the smell being completely neutralised; and the manufacturer is thus enabled to prepare, from the materials prescribed for the second class paper, an article in all respects equal to many of the kinds of paper belonging to the first class. The consequence is, that the person who manufactures paper of this description, under the name of second class, is enabled to take a double advantage of honest manufacturers of first class paper; first, by using materials of a much cheaper description than those prescribed by law; and, secondly, by paying half the duty he ought to pay."—(*Report*, p. 11.) The equalisation of the duty will put an end to frauds of this sort; and will leave every one at liberty to use such articles in the manufacture as he may think most suitable.

Stained Paper.—The Commissioners further recommended the total abolition of the duty of 1¾*d.* per square yard, charged on all stained or printed paper over and above the original duty charged on the paper so prepared—a recommendation which, we are glad to say, has also been complied with. This duty was most oppressive, being equivalent to a duty of 1*s.* per lb.; and, as the paper used by the stainers paid the first class duty, it follows that, when finished, it was loaded with the enormous duty of 1*s.* 3*d.* per lb.! Printed paper is now so very cheap that it may be used even in the poorest houses; and its more general diffusion will be productive of an increase of comfort and cleanliness not easy to be imagined.

It will be seen from the accounts hereafter inserted (see Chap. Revenue and Expenditure), that the total produce of the duty on paper in 1835, the year previous to the reduction, was 928,578*l.* 12*s.* 2*d.*, of which the duty on stained paper amounted to 60,141*l.* 2*s.* 11*d.*, leaving for the amount of duty on the description of paper still subject to the excise 868,437*l.* 9*s.* 3*d.* The duty having been reduced a half on the 10th of October, 1836, its produce in 1837, had the consumption continued stationary, would have been 434,218*l.* 14*s.* 7*d.*; but, in point of fact, it amounted to 580,153*l.* 10*s.* 9*d.*, showing that the consumption had increased about 33½ per cent.! And there is every reason to think that this increase will be progressive.

A Return of the Number of Pounds Weight of Paper, made in each collection of Excise, for the United Kingdom, during the Year ended 5th January, 1835; distinguishing the Qualities, whether of the first or Second Class; with the Amount of Duty thereon.

ENGLAND.

Collections.	First Class.	Second Class.	Amount of Duty. L.	s.	d.
	Lbs.	Lbs.	L.	s.	d.
Barnstaple	140,668	46,386	2,048	5	3
Bath	534,865	145,769	7,596	17	4½
Bedford	82,965	9,539	1,096	13	7½
Bristol	397,143	1,593	4,974	4	10½
Cambridge	705,485	2,571	8,834	12	7½
Canterbury	983,956	322,411	14,314	10	4½
Chester	468,425	44,318	6,132	6	0
Cornwall	186,164	296,813	4,182	2	7½
Coventry	150,117	39,258	2,121	16	6
Cumberland	237,392	15,487	3,064	3	10½
Derby	634,349	90,002	8,491	17	6
Dorset	35,741	75,014	915	10	9
Durham	1,242,203	497,273	18,635	9	10½
Essex	21,275	209	267	4	10½
Exeter	1,802,335	1,147,293	29,699	15	4½
Gloucester	176,545	67,530	2,628	17	6
Grantham	84,611	34,871	1,275	11	7½
Halifax	2,248,402	756,906	34,835	13	9
Hants	1,612,407	347,329	22,325	16	10½
Hereford	831,747	913,887	16,116	2	7½
Hertford	158,983	- -	1,987	5	9
Hull	16,536	21,611	341	15	4½
Isle of Wight	145,999	32,426	2,027	13	0
Lancaster	2,216,339	223,532	29,476	6	3
Leeds	1,456,947	798,336	23,201	8	9
Lichfield	332,167	232,803	5,607	2	1½
Lincoln	207,758	83,479	3,118	14	4½
Liverpool	411,362	145,310	6,050	4	3
Lynn	644,738	212,632	9,388	3	6
Manchester	3,339,726	1,858,312	53,361	0	6
Newcastle	1,241,638	2,442,866	30,788	7	9
Northampton	210,229	10,733	2,694	18	10½
Northwich	640,262	272,158	9,704	5	3
Norwich	306,748	124,067	4,609	15	4½
Oxford	893,444	11,433	11,239	10	1½
Plymouth	411,396	255,061	6,736	15	4½
Reading	2,464,032	712,380	35,252	15	6
Rochester	4,618,535	695,177	62,076	10	10½
Salisbury	376,768	29,595	4,894	11	4½
Salop	77,727	30,433	1,101	15	10½
Sheffield	610,768	520,180	10,885	14	6
Stafford	225,036	12,731	2,892	10	4½
Stourbridge	35,424	33,980	655	3	6
Suffolk	85,799	125,967	1,859	15	7½
Surrey	172,188	- -	2,152	7	0
Sussex	456,511	17,636	5,816	12	3
Uxbridge	7,726,565	10,467	96,647	12	1½
Wales, East	62,969	26,408	952	3	3
North	194,640	45,535	2,717	12	0
West	99,805	73,200	1,705	1	3
Wellington	120,611	59,960	1,882	7	9
Whitby	627,491	205,640	9,128	17	9
Worcester	181,536	725	2,273	14	7½
York	88,447	30,848	1,298	7	9
Country Collections	43,628,915	14,210,121	634,174	13	10½
London	1,084,631	970	13,563	19	0
Total	44,713,546	14,211,091	647,738	12	10½

SCOTLAND.

Collections.	First Class.	Second Class.	Amount of Duty. L.	s.	d.
	Lbs.	Lbs.	L.	s.	d.
Aberdeen	1,014,768	245,537	14,219	4	1½
Ayr	255,849	278,218	4,936	19	6
Dumfries	22,784	10,355	349	10	4½
Fife	491,585	7,696	6,192	18	3
Glasgow	1,047,117	125,741	13,874	16	10½
Haddington	3,380,744	21,805	42,395	11	7½
Linlithgow	266,076	185,193	4,483	8	1½
Perth	9,277	1,952	128	3	3
Stirling	306,569	344,348	5,984	5	9
Edinburgh	671,781	662,724	12,539	5	9
Total	7,466,550	1,883,569	105,104	3	7½

IRELAND.

Collections.	First Class.	Second Class.	Amount of Duty. L.	s.	d.
	Lbs.	Lbs.	L.	s.	d.
Armagh	10,984	29,569	322	2	1½
Coleraine	247,731	84,377	3,623	19	10½
Cork	162,631	38,138	2,271	5	0
Drogheda	22,720	- -	284	0	0
Galway	182,141	- -	2,276	15	3
Limerick	21,960	13,225	357	3	1½
Lisburn	61,080	17,138	869	17	3
Londonderry	5,582	13,353	153	4	7½
Mallow	24,807	30,648	501	12	9
Naas	1,053,838	102,321	13,562	9	7½
Waterford	91,207	128,739	1,944	14	1½
Dublin	9,004	- -	112	11	0
Total	1,873,625	457,508	26,279	14	9

TOTALS.

Collections.	First Class.	Second Class.	Amount of Duty. L.	s.	d.
	Lbs.	Lbs.	L.	s.	d.
England	44,713,546	14,211,091	647,738	12	10½
Scotland	7,466,550	1,883,569	105,104	3	7½
Ireland	1,873,625	457,508	26,279	14	9
The United Kingdom	54,053,721	16,552,168	779,122	11	3

An Account of the Quantities of the different Sorts of Paper charged with Duties in 1833 and 1834, the Rates of Duty on such Paper, the Gross and Nett Produce of the Duties, the Drawback on the Paper exported, and the Cost per Cent. at which the Nett Revenue is collected, separating the Accounts of England, Scotland, and Ireland.

	Quantities charged with Duty.								Gross Produce.	Nett Produce.	Drawbacks on Paper Exported.	Allowances to the Universities, King's Printer, Hot-pressers &c.
	First Class Paper.	Rate per lb.	Second Class Paper.	Rate per lb.	Mill board, Glazed Paper, &c.	Rate per Cwt.	Paste-board.	Rate per Cwt.				
1833.	Lbs.	d.	Lbs.	d.	Cwts.	s.	Cwts.	s.	L.	L.	L.	L.
England	42,735,481	3	14,198,390	1½	1,753 22,227	28 21	10,551 3,029	28 14	665,591	621,774	30,947	13,570
Scotland	7,317,789	-	1,770,225	-	3,640	-	2,467 2,404	28 14	111,561	100,027	8,659	2,875
Ireland	1,888,590	-	508,490	-	518	-	22	28	27,362	26,678	649	35
Totals	51,941,860	-	16,477,105	-	28,138	-	18,523	-	804,514	748,479	39,556	16,480
1834.												
England	44,713,546	3	14,211,091	1½	1,875 24,423	28 21	10,621 2,719	28 14	691,941	639,467	36,789	15,685
Scotland	7,466,550	-	1,883,569	-	3,647	21	2,609 3,738	28 21	115,204	105,894	6,460	2,850
Ireland	1,873,62	-	457,508	-	29 322	28 21	7 8	28 14	26,677	25,801	876	
Totals	54,053,721	-	16,552,168	-	30,296	-	19,102	-	833,823	771,163	44,125	18,535

A drawback of the duty on paper is allowed on all books exported. The declared value of such export in 1834 was 122,595*l.*

Sect. X. *Malt, Breweries and Distilleries.*

The establishments connected with the conversion of grain into fermented and distilled liquors are of much greater magnitude in Great Britain than in any other country. Owing to the want of wine as a native product, and to the heavy duties that have always been laid upon it when imported, the common beverage of the great bulk of the people has always consisted of fermented or distilled liquors, obtained either from malted or from raw grain. The manufacture of malt, beer, and spirits is important, not only from the amount of capital employed in the business, and the value of the products, but also because the duties on them constitute an important item of the public revenue.

Malt.—The process followed in the manufacture of Malt is very simple; and has been carried on for a very long period nearly in the same manner in which it is conducted at present. It is succinctly described in the Report of the Commissioners of Excise Inquiry on Malt.

Description of the Process of Malting.—"Barley is the grain generally used, but oats and other grain, and pulse, viz. beans and peas, are sometimes used for the purpose; and the process commences with wetting or steeping the same in an oblong or square vessel called a cistern. Sometimes the grain is first put into the cistern and then covered with water, at other times the water is first put in and the grain added afterwards.

"Very soon after the grain has been covered with water, it begins to swell and increase in bulk, and continues to do so pretty regularly until it reaches its maximum. The amount of the swell depends not only upon the length of time the grain remains in the steep covered with water (which by law can in no case be less than forty hours), but also upon its quality, and state of dryness before put in steep, and must of course be expected to vary; but the law presumes that the swell will amount to 17½ bushels for every 82½ bushels before steeped.

"The grain, after being steeped, and the water drawn off, is thrown out of the cistern into a square or oblong utensil called a couch-frame, in which it is required by law to remain for the space of 26 hours at the least. Immediately after the expiration of 26 or 30 hours, as the case may be, the grain in operation is said to be on the floor; and during the time it remains on the floor it undergoes a variety of changes.

"1st. The grain at a certain period (which varies according to circumstances) becomes moist, and emits a rather agreeable smell, and soon after this period the roots begin to make their appearance.

"2d. The acrospire or future stem begins to swell, and gradually advances under the husk from the same end where the roots are observed to spring, till it nearly reaches the other extremity of the grain.

"3d. The kernel, as the acrospire advances through it, becomes friable, and sweet-tasted, and the whole art of malting depends upon e proper regulation of these changes. In a day or two after the ain has been thrown out of the cistern, the roots begin to appear at e end of each kernel in the shape of a small white protuberance, ıich soon divides itself into distinct fibres or rootlets. The grain out this time appears moist on the outside, which is called *sweating*, d which usually goes off in a day or two.

"In about a day, generally, after the spreading of the roots, the diments of the future stem may, by splitting the grain, be seen to ıgthen. It rises from the same extremity with the root, and, adncing with the husk, would at last issue from the opposite end of the ain, and assume the form of a green blade of grass; but the process malting is brought to a conclusion some time before the stem has ıde such progress as to burst the husk.

"As the germination proceeds, the grain is gradually spread thinner the floor; and when the moisture has been in some degree evapoted, and the germination has thereby been checked, it is again graally laid thinner to wither. Maltsters differ much in their manner working, which is affected also by the state of the weather.

"The grain, having thus germinated to the extent required, is put on the kiln, and heat applied by means of a fire, which is regulated cording to circumstances; and when the malt has attained the reisite state of dryness, it is thrown off the kiln, the process being en finished."

The first of the following Tables shows the quantity of malt annuy made in England and Wales since 1702, with the rates of duty arged upon it, and the produce of the duties. There are similar counts for Scotland and Ireland; the one commencing with 1793, d the other with 1790.

The manufacture of malt has been carried on in England to a great tent from a very early period; but it is singular that, notwithstandg the products obtained from it have always formed the principal verage of the great bulk of the people, the consumption of malt ried very little from the beginning of the last century till within the st half dozen years! This extraordinary result, so different from ıat would have been *à priori* anticipated, is ascribable partly to the crease of the duties laid on malt, but still more to the greater inease of those laid on beer, its principal product. No doubt, however, has been partly, also, occasioned by the change that has taken place the mode of living, by the introduction and universal use of tea, ffee, and other articles, substituted in the place of beer But the crease that has taken place in the consumption of malt since the duction of the duty on it in 1822, and the repeal of the beer duty 1830, seems to prove that the duties were, at least, quite as instruental in checking the consumption as the introduction of the articles luded to.

Breweries.—The establishments in Great Britain for the manucture of beer, particularly those in the metropolis, are, many of ıem, of great magnitude, and employ a large amount of capital. he latter principally produce *porter*, the favourite beverage of the ondoners. This is a peculiar species of beer, of a bitterish taste, ıd a dark colour, both of which it derives from its being prepared

from malt drie
Ale is produce
ture. Edinbu
England, are

Account of the
the Revenue
to 1836.

Years.	Number Bushels of
1702	12,166,
1703	26,754,
1704	19,765,
1705	27,120,
1706	23,099,
1707	25,002
1708	23,209
1709	20,275
1710	19,671
1711	22,262
1712	22,31
1713	25,06
1714	20,01
1715	24,1
1716	26,
1717	28,8
1718	26,8
1719	28,
1720	25,
1721	28,
1722	32,
1723	30,
1724	24
1725	27
1726	27
1727	25
1728	2
1729	2
1730	2
1731	2
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from malt dried at a high temperature, and in some degree charred. Ale is produced from pale malt, or malt dried at a very low temperature. Edinburgh, Burton-on-Trent, and several other districts of England, are celebrated for the superiority of their ale.

Account of the Quantities of Malt charged with Duty in England and Wales, of the Revenue received thereon, and of the Rates of Duty, in each Year, from 1702 to 1836.

Years.	Number of Bushels of Malt.	Amount of Duty. L.	s.	d.	Rate of Duty per Bushel.
1702	12,166,778	513,907	5	0	6$\frac{16}{21}$d.
1703	26,754,505	691,577	4	11	—
1704	19,765,042	512,735	4	4	—
1705	27,120,982	702,957	11	1	—
1706	23,099,630	599,477	3	7	—
1707	25,002,855	618,846	15	2	—
1708	23,909,966	602,837	5	0	—
1709	20,275,335	527,355	19	10	—
1710	19,671,021	511,954	10	6	—
1711	22,263,126	578,839	19	1	—
1712	22,313,483	580,168	16	7	—
1713	25,060,639	650,932	14	4	—
1714	20,019,767	520,771	7	0	—
715	24,472,610	635,330	18	6	—
16	26,645,119	691,293	18	3	—
17	28,859,926	748,383	19	6	—
18	26,862,157	697,166	1	3	—
9	28,228,627	732,535	7	8	—
	25,625,844	665,527	1	9	—
	28,587,391	741,901	0	6	—
	32,999,688	855,860	18	7	—
	30,655,498	795,352	8	0	—
	24,227,667	629,502	12	2	—
	27,265,172	707,467	12	3	—
	27,016,303	700,933	19	1	—
	25,401,576	659,331	15	3	—
	20,951,269	544,457	12	8	—
	23,032,216	597,847	5	11	—
	28,410,421	736,815	8	0	—
	25,833,240	670,180	4	3	—
	5,980,568	699,381	8	7	—
	,795,100	772,109	2	9	—
	,087,437	702,291	16	3	—
	,494,686	661,259	17	3	—
	661,561	613,919	1	0	—
	91,366	635,278	9	4	—
	5,413	677,866	0	2	—
	6,197	692,787	2	0	—
	4,671	573,059	9	7	—
	,254	523,182	5	4	—
	389	671,011	6	3	—
	91	681,740	7	11	—
	89	822,943	12	5	—
	69	645,998	13	5	—
	50	621,048	17	10	—
	7	645,029	4	1	—
		684,653	10	8	—
		646,946	18	5	—
		758,396	18	1	—
		699,318	11	8	—
		629,314	13	7	—
		654,430	16	1	—
		708,255	4	1	—
		722,732	2	5	—
		624,851	4	9	—
		457,719	16	8	—
		648,173	14	6	—
		727,158	15	7	—
		999,818	11	11	6½$\frac{16}{21}$d.-9½$\frac{2}{21}$d.
		723,040	17	2	9½$\frac{2}{21}$d.
		07,851	13	11	
		0,388	16	4	—
		23,554	9	3	—
		5,756	19	8	—
		,314	16	10	—
		,648	11	10	—
		,188	0	10	—
		,799	11	2	—
		,827	12	6	—
		,344	11	6	9½$\frac{2}{21}$d.
1772	27,638,150	1,070,125	14	9	—
1773	21,467,926	835,713	9	10	—
1774	23,949,905	931,968	14	2	—
1775	24,967,360	971,085	8	2	—
1776	23,336,298	1,024,336	2	5	—
1777	25,814,436	1,004,050	9	3	—
1778	26,318,736	1,022,950	9	1	—
1779	26,273,405	1,028,083	1	6	9½$\frac{2}{21}$d.-9½$\frac{4}{5}$d.
1780	30,805,100	1,534,454	14	5	9½$\frac{4}{5}$d.-1s. 4¼d.
1781	26,718,048	1,817,556	7	4	1s. 4¼d.
1782	27,159,104	1,846,106	11	10	—
1783	16,712,114	1,138,782	16	0	—
1784	25,796,105	1,745,953	19	8	—
1785	26,269,439	1,777,917	15	2	—
1786	22,074,334	1,493,548	2	3	—
1787	26,439,578	1,789,780	3	9	—
1788	26,048,072	1,763,277	17	8	—
1789	23,509,592	1,591,463	15	6	—
1790	21,976,959	1,487,775	6	0	—
1791	27,070,363	2,092,191	15	10	1s. 4¼d.-1s. 7¼d.
	Stock in hand	46,716	18	3	
1792	27,789,166	2,142,950	12	10	1s. 7¼d.-1s. 4¼d.
1793	23,706,765	1,604,717	9	9	1s. 4¼d.
1794	24,813,311	1,679,222	8	6	—
1795	23,960,822	1,620,315	7	6	—
1796	27,282,973	1,846,819	5	9	—
1797	29,979,110	2,029,349	7	11	—
1798	26,143,432	1,769,476	13	11	—
1799	30,805,822	2,083,701	14	0	—
1800	14,049,749	950,296	18	5	—
1801	18,005,786	1,218,455	16	7	—
1802	29,432,584	2,175,406	18	4	1s. 4¼d.-2s. 5d.
	Stock in hand	466,633	8	7	
1803	29,562,038	3,555,906	18	0	2s. 5d.-4s. 5¾d.
1804	21,854,111	4,858,056	9	4	4s. 5¾d.
	Stock in hand	914,356	0	0	
1805	21,665,204	4,841,066	15	0	—
1806	26,652,425	5,955,716	0	0	—
1807	24,158,843	5,397,635	6	4	—
1808	21,726,415	4,854,698	2	4	—
1809	22,120,984	4,942,771	7	8	—
1810	23,546,346	5,261,362	12	0	—
1811	25,982,719	5,806,251	15	0	—
1812	18,092,965	4,042,716	16	4	—
1813	21,701,356	4,849,419	5	0	—
1814	25,320,615	5,657,228	8	4	—
1815	26,246,795	5,865,606	18	8	—
1816	21,158,318	4,217,259	13	1	4s. 5¾d.-2s. 5d.
1817	20,855,566	2,509,817	18	4	2s. 5d.
1818	24,629,838	2,964,024	12	10	—
1819	22,612,290	3,268,881	3	2	2s. 5d.-3s. 7¼d.
	Stock in hand	420,263	8	8	—
1820	23,884,212	4,311,446	5	1	3s. 7¼d.
1821	26,138,437	4,718,360	10	0	—
1822	26,688,512	3,624,242	8	0	3s. 7¼d.-2s. 7d.
1823	24,845,152	3,203,502	17	6	2s. 7d.
1824	27,615,383	3,560,693	0	0	—
1825	29,572,741	3,813,072	7	6	—
1826	27,335,971	3,530,895	10	8	—
1827	25,096,337	3,241,610	3	11	—
1828	30,517,819	3,941,884	19	1	—
1829	23,428,135	3,026,133	19	6	—
1830	26,900,902	3,471,699	16	10	—
1831	32,963,470	4,257,781	10	10	—
1832	31,669,771	4,090,678	15	1	—
1833	33,789,010	4,364,413	15	10	—
1834	34,449,646	4,449,745	0	0	—
1835	36,078,855	4,660,185	0	0	—
1836	37,196,998	4,804,612	0	0	—

;uantities of Malt charged with Duty in Scotland, of the Revenue
on, and of the Rates of Duty, in each Year, from 1793 to 1834.

mount Duty.	Rate of Duty per Bushel.		Years.	Number of Bushels of Malt.	Amount of Duty.	Rate of Duty per Bushel.	
L.					L.	From Barley.	From Bigg.
58,164	8¼d		1815	1,297,777	236,839	3s. 9½d.	3s. 1½d.
56,823	—		1816	1,162,024	164,743	3s. 9½d.-1s. 8¼d.	3s. 1½d.-1s. 8¼d.
57,419	—		1817	1,093,678	94,509	1s. 8¼d.	1s. 8¼d.
10,829	—		1818	1,390,515	120,274	—	—
79,670	—		1819	1,454,320	179,266	1s. 8¼d.-3s. 7½d.	1s. 8¼d.-3s. 7½d.
55,550	—			Stock in hand	17,739		
30,075	—		1820	1,182,208	212,282	3s. 7½d.	3s. 7½d.-3s. 1d.
29,670	—		1821	1,305,659	231,606	—	3s. 1d.-2s. 10d.
80,560	—						
70,527	8¼d.-11s. 8¼d.		1822	1,403,177	183,032	3s. 7½d.-2s. 7d.	2s.10d.-1s.9¼d.-2s.
80,389							
67,878	11s.	8¼d.	1823	1,616,590	198,696	2s. 7d.	2s.
	Barley.	Bigg.	1824	2,788,608	335,505	—	—
7,587	3s. 9½d.	3s. 1½d.	1825	3,925,847	462,144	—	—
14,808	—	—	1826	2,726,555	335,574	—	—
16,935	—	—	1827	2,714,073	333,489	—	—
5,642	—	—	1828	3,867,159	478,308	—	—
6,647	—	—	1829	3,712,563	437,588	—	—
9,934	—	—	1830	4,101,946	505,651	—	—
9,852	—	—	1831	4,186,955	515,579	—	—
9,206	—	—	1832	3,714,334	458,096	—	—
4,882	—	—	1833	4,302,036	530,358	—	—
9,870	—	—	1834	4,491,292	553,567	—	—
3,705	—	—	1835	4,459,553	551,096	—	—
1,776	—	—	1836	4,903,187	611,910	—	—

Quantities of Malt charged with Duty in Ireland, of the Revenue
, and of the Rates of Duty, in each Year, from 1790 to 1834.

Amount of Duty	Rate of Duty per Bushel.	Years.	Number of Bushels of Malt.	Amount of Duty.	Rate of Duty per Bushel.	
L.				L.		
135,496	7d.	1812	2,206,206	281,117	2s. 6¼d.	
140,412	—	1813	2,967,603	428,830	2s. 6¼d.-3s. 3¼d.	
137,522	—		Stock in hand	63,406		
148,197	—	1814	3,156,175	572,815	3s. 3¼d.	
186,315	9½d.	1815	2,664,466	482,685	3s. 3¼d.-4s. 5d.	
17,672			Stock in hand	122,233		
290,051	1s. 3d.	1816	1,879,721	359,809	4s. 5d.-2s. 4½d.	
36,761		1817	1,385,486	164,771	2s. 4½d.	
306,070	—	1818	1,783,636	211,930	—	
288,558	—	1819	1,742,444	207,036	—	
313,661	1s. 5d.	1820	1,793,671	319,684	3s. 6¼d.	
19,768			Stock in hand	43,974		
253,170	1s. 6½d.	1821	1,949,315	347,424	—	
12,226		1822	1,756,391	275,614	3s. 6¼d.-2s. 7d.	
52,090	—	1823	1,702,395	217,302	2s. 7d..	
78,760	—	1824	2,107,752	276,255	—	
276,115	—	1825	2,706,862	356,108	—	
283,584	1s. 6½d.-1s. 9½d.	1826	2,406,253	310,808	—	
31,162		1827	1,803,091	232,899	—	
270,036	1s. 9½d.-2s. 3½d.	1828	2,409,228	311,192	—	
28,698		1829	2,012,079	259,894	—	
317,299	2s. 3½d.				From Barley	From Bigg.
334,105	2s. 3½d.-2s. 6¼d.	1830	1,959,606	251,616	2s 7d.	2s.
22,220		1831	2,101,844	263,308	—	—
302,281	2s. 6¼d.	1832	2,006,350	250,278	—	—
331,010	—	1833	1,984,849	245,987	—	—
370,991	—	1834	2,201,653	272,991	—	—
321,425	—	1835	2,333,615	288,602	—	—
311,723	—	1836	2,287,635	283,357	—	—

imposed on the beer produced at public breweries so
and was continued down to 1830, when it was re-
ubjoin an

; the Quantity of the different Sorts of Beer made respectively in
cotland, in each Year, from 1820 to 1830, with the Rates of Duty
e Annual Produce of the Duties.

England.					Scotland.					
able Beer.	Intermediate Beer.	Amount of Duty.			Strong Beer.	Table Beer.	Intermediate Beer.	Amount of Duty.		
Barrels.	Barrels.	L.	s.	d.	Barrels.	Barrels.	Barrels.	L.	s.	d.
1,518.95	- -	2,838,149	1	1	123,114	207,983	Nil.	80,972	6	0
1,[illegible]28,575	- -	2,987,366	8	6	128,939	219,546	—	85,060	4	0
1,570,043	- -	3,153,661	5	7	128.107	227,478	—	85,117	12	0
1,483,045	7,018	3,190,908	12	8	119,292	226,332	—	80,532	8	0
1,544,048	15,660	3,326,277	14	2	118,813	239,956	—	81,894	10	0
1,606,899	6,160	3,495,597	9	1	133,903	264,035	—	91,731	2	2
1,603,653	7,707	3,268,655	9	9	122,158	271,335	—	79,940	0	1
1,532,308	17,158	3,131,662	6	0	112,067	241,293	—	72,877	0	10
1,530,419	62,617	3,222,807	2	11	118,943	247,443	—	76,984	16	8
1,380,469	55,498	2,923,118	1	5	111,071	229,384	—	71,786	19	5
1,066,262	41,834				75,262	178,011	—			

throughout this whole period, on strong beer 9s. 10d., on table ditto 1s. 11¼d., and on inter-
per barrel. The beer duty did not extend to Ireland.

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Ditto above 20 and not above 50
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— 100 — 1000
— 1000 . . .
Brewers of table beer . .
Retail brewers under 5 Geo. 4. c
Sellers of strong beer only, n
brewers . . .
Beer retailers whose premises a
under 20*l*. per annum .
Ditto 20*l*. and upwards .
Retailers of beer, cider or perry u
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cap. 85.

Distilleries.—The
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The beer duties having ceased in 1830, there are no means of determining the quantities that have been brewed in the interval. There can, however, be no doubt of their having been materially augmented. The increased consumption of malt, more than three fourths of which is used by brewers and victuallers, proves that such is the fact. From about 1,800,000 to 2,000,000 barrels of beer are annually produced by the great porter breweries of London. The largest of these establishments belongs to Messrs. Barclay, Perkins, and Co., being, in all respects, framed on the most gigantic scale. It formerly belonged to Mr. Thrale, the friend of Dr. Johnson; but, since his death, it has been greatly enlarged.

The beer brewed in private families for their own use has been always exempted from all charges on account of duty, except that on malt. But, instead of being an advantage, this exemption was one of the most objectionable parts of the beer duty. Persons in the middle and lower ranks of life, particularly those resident in towns, have no facilities for private brewing; so that, in point of fact, the exemption redounded to the advantage of few except the rich and the great, who evaded the duty, while it fell with its full weight on most others. It is astonishing that an unjust monopoly of this sort should have been tolerated for so long a perod.

The beer duty did not extend to Ireland; but it would seem, from the account of the quantity of malt used in that country by brewers, that the quantity of beer produced in it must have been about double that produced in Scotland. Dublin porter enjoys a pretty high reputation.

The brewers of beer being subject to licence duties, varying according to the quantity they produce, their number is exactly known. This, also, is the case with the retailers of beer.

Account of the Number of Brewers and Retailers of Beer in England, Scotland, and Ireland respectively, in 1835 and 1836.

	England.		Scotland.		Ireland.	
	1835.	1836.	1835.	1836.	1835.	1836.
Brewers of strong beer not exceeding 20 barrels - - -	8,626	8,894	93	54	26	36
Ditto above 20 and not above 50 - -	7,426	7,894	28	17	4	4
— 50 — 100 - -	10,028	10,294	28	30	10	10
— 100 — 1000 - -	18,908	19,430	191	187	58	65
— 1000 - - - -	1,602	1,658	119	116	146	148
Brewers of table beer - - -	17	10	165	198		
Retail brewers under 5 Geo. 4. cap. 54. -	25	21	16	17		
Sellers of strong beer only, not being brewers - - - -	1,001	991	26	16	51	56
Beer retailers whose premises are rated under 20*l.* per annum - - -	38,052	39,765	16,275	16,604	17,952	19,551
Ditto 20*l.* and upwards - - -	14,889	15,427	751	781	1,697	1,732
Retailers of beer, cider or perry under the 4 Will. 4. cap. 64. and 4 and 5 Will. 4. cap. 85.	38,432	45,742				

Distilleries.—The distilleries of Great Britain and Ireland are not less, if they be not more, important than the breweries. Malt liquor has always been the favourite drink of the bulk of the people of England; but they also consume, particularly in the metropolis and other great towns, large quantities of gin. Whiskey has been, for a lengthened period, the favourite or national beverage of Scotland and Ireland. It were well, perhaps, for the public, that the consumption of ardent spirits were diminished; and repeated attempts have been made, by the imposition of heavy duties, and otherwise, to bring this about. But these attempts have not, in any instance, been successful. Whenever the duty is carried beyond reasonable limits, it gives rise to smuggling; and, without in any degree lessening the evil of drunkenness, it brings the law into contempt, and enables those who despise its enactments to undersell the fair trader. The truth of these statements has been proved by the most comprehensive experience, and is now, indeed, almost universally admitted. The existing duties on spirits—in so far, at least, as Scotland and Ireland are concerned—seem to be on a very reasonable footing.

Account of the Number of Distillers, Rectifiers, and of the Dealers in, and Retailers of, Spirits in England, Scotland, and Ireland respectively, in 1833 and 1834.

	England.		Scotland.		Ireland.	
	1833.	1834.	1833.	1834.	1833.	1834.
Distillers and rectifiers - - -	111	108	241	209	98	146
Dealers in spirits not being retailers - -	2,986	3,019	543	534	365	372
Retailers of spirits whose premises are rated under 10*l*. per annum - - -	14,754	14,543	11,659	11,494	14,606	15,126
Ditto at 10*l*. and under 20*l*. - -	13,968	18,442	4,391	4,109	3,618	3,807
— 20*l*. — 25*l*. - -	3,001	2,960	259	222	468	463
— 25*l*. — 30*l*. - -	1,765	1,762	131	133	308	264
— 30*l*. — 40*l*. - -	3,385	3,360	181	156	392	330
— 40*l*. — 50*l*. - -	2,220	2,265	64	63	219	209
— 50*l*. and upwards - -	4,251	4,269	165	166	475	411

Account of the Number of Gallons of Foreign and Colonial Spirits upon which Duty was charged in the United Kingdom since the Year 1832; with the Amount of Duty received thereon; also, a similar Account of Home-made Spirits and of Foreign Wine.

Years.	Foreign and Colonial Spirits.				Home-made Spirits.	Total of Spirits.	Foreign Wines of all Sorts.
	Brandy	Geneva.	Rum.	Total.			
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
1832	1,601,662	22,301	3,537,817	5,161,780	21,346,753	26,508,533	6,178,[illegible]
1833	1,357,381	20,986	3,492,765	4,871,132	21,874,455	26,745,587	6,421,631
1834	1,388,751	21,899	3,345,666	4,756,116	23,397,760	28,153,876	6,712,531
1835	1,315,071	19,703	3,417,682	4,752,456	24,710,208	29,462,664	6,640,533
1836	1,257,960	20,006	3,325,068	4,603,034	26,745,300	31,348,334	7,038,248
1837	1,209,107	18,151	3,562,702	4,789,960	24,493,539	29,283,499	6,562,973
Rate	22*s*. 6*d*. per Gallon.	22*s*. 6*d*. per Gallon.	9*s*. per Gall.		Rate of Duty on Home-made Spirits. In England 7*s*. 6*d*. per Gall. Scotland 3*s*. 4*d* " Ireland 3*s*. 4*d*. until Sept., 1834, when 2*s*. 4*d*.		Cape Wine 2*s*. 9*d*., other sorts 5*s*. 6*d*.

Account of the Number of Proof Gallons of Rum, Brandy, Geneva, and all other Foreign and British Spirits, that paid Duty in England, Scotland, and Ireland respectively, during 1837; with the Total Number of Gallons that paid Duty in the United Kingdom, and the Total Duty in the above Year. (Parl. Paper, No. 323, Sess. 1838.)

	England.		Scotland.		Ireland.		United Kingdom.	
	Number of Gallons.	Net Amount of Duty.	Number of Gallons.	Net Amount of Duty.	Number of Gallons.	Net Amount of Duty.	Number of Gallons.	Net Amount of Duty.
		L.		*L*.		*L*.		*L*.
Rum - -	3,079,778	1,385,910	83,804	37,720	20,673	9,299	3,184,255	1,432,929
Brandy -	1,160,608	1,305,572	31,161	35,056	16,877	18,987	1,208,646	1,356,615
Geneva - -	11,958	13,468	4,835	5,439	1,441	1,622	18,234	20,529
Other Foreign Spirits	11,802	9,213	1,140	809	388	383	13,330	10,405
Total of Foreign Spirits	4,264,146	2,714,163	120,940	79,024	39,379	30,291	4,424,465	2,823,478
Spirits of the Manufacture of the United Kingdom	7,133,869	2,674,900	6,124,035	1,020,570	11,235,635	1,310,765	24,493,539	5,006,235
Ditto - of Guernsey or Jersey -	25,048	9,390	51	9	- -	- -	25,099	9,399
Spirits of all kinds	11,423,063	5,398,453	6,245,026	1,099,603	11,275,014	1,341,056	28,943,103	7,8:9,1 2

N. B.—The trifling discrepancy between the sums in this and the foregoing statement arises from the circumstances of the quantities exported after payment of the duty being deducted in this and not in the other.

SECT. XI. *Manufactures of Hats, Soap, Refined Sugar, &c.*

1. HATS being universally worn by almost all the male population of the British empire, the manufacture for home consumption is very great, and large quantities are exported. The quality of hats differs very widely. The best, or those called *stuff hats*, have the body made of fine coney wool, red Vigonia wool, &c., the nap or covering consisting, in the best hats, of beaver fur, and in others, of fine hare's wool, neutria fur, &c. About 1000 men are employed in London in the making and finishing the best hats, exclusive of about 3000 men employed in Gloucestershire and Derbyshire in body-making and ruffing. *Plated hats* are principally made in Lancashire, Cheshire, and Staffordshire. The men employed in the business in these counties, in this department, including apprentices, may amount to about 3000. The coarsest species of hats, or those called *felt hats*, are principally made at Atherstone, Rudgeley, Bristol, and Newcastle-under-Lyne. Formerly, very large quantities were produced; but of late years the manufacture has rapidly declined. Great numbers of *silk hats* are produced in London, Manchester, Liverpool, Birmingham, Glasgow, &c. In all about 3000 men are employed in this branch, and many thousand dozens are annually exported to Italy, New South Wales, &c. On the whole, the entire value of the hats manufactured in Great Britain may be estimated, including felt caps for soldiers, at about 2,420,000*l.* a year; and the total number of men employed in the manufacture at about 20,000.

The exports of beaver and felt hats, in 1834, amounted to 40,155 dozens, of the declared value of 125,970*l.* They are mostly sent to the British West Indies and North America, and to Brazil.

Straw Hats—The manufacture of straw hats, in imitation of those brought from Tuscany, has been long carried on to a very considerable extent in the counties of Bedford, Herts, Bucks, and Essex; Dunstable, in Bedfordshire, being peculiarly celebrated for the excellence of its plait. Owing, however, to the straw of England being less suitable than that of Tuscany for the manufacture, the finest specimens of English plait are inferior to that brought from Italy, and but for the heavy duty on Italian hats and plait, the home manufacture of all but the coarser species would, most probably, be destroyed. Of late years large quantities of Tuscan straw have been imported under a nominal duty, and the plait made from it is but little inferior to that brought from Italy. A species of dwarfed rye straw, raised in Orkney, has, it is said, been found better fitted for plait than any description of straw raised in Britain; and considerable numbers of hats have been produced from it. We believe, however, that the manufacture of Orkney hats has rather declined. In 1833 its entire produce amounted to about 4,800*l.*

For an account of the straw hats, plait, and straw imported, exported, and entered for consumption in 1835 and 1836, see the account of the imports and exports, &c. of foreign articles in those years, *post.*

2. SOAP AND CANDLES.—The use of soap as a detergent is known

to every one; and it should, in fact, be considered more in the light of a necessary of life, than as the most indispensable of luxuries. Its consumption in this country is immense; and, being subjected, in Great Britain at least, to an excise duty, the magnitude of the manufacture and its distribution are pretty accurately known.

Liverpool, London, Bristol, Runcorn, Newcastle, Glasgow, Brentford, Dudley, Hull, &c. are the principal seats of the manufacture. Thus of 143,904,897 lbs. of hard soap made in Great Britain in 1834, Liverpool furnished 37,806,923 lbs.; London, 32,659,609 lbs.; Bristol, 8,175,696 lbs.; Runcorn, 7,492,063 lbs.; Newcastle, 6,992,960 lbs. Glasgow, 6,493,136 lbs.; Brentford, 5,357,487 lbs.; Dudley, 4,867,187 lbs.; Hull, 3,378,925 lbs., &c. Of 10,355,425 lbs. of soft soap made during the same year, Liverpool supplied nearly a half, the remainder being supplied by Glasgow, London, Hull, &c. There is no duty on the soap made in Ireland, so that the quantity prepared in that part of the empire is not known; but it is quite inconsiderable, compared with that made in England.

Duty on Soap. — This article has been long subject to an excise duty, formerly of 3*d.* per lb. on hard, and 1½*d.* per lb. on soft; but in 1833 these duties were reduced, the former to 1½*d.* and the latter to 1*d.* per lb. It has, however, been ascertained that this reduction is insufficient to prevent smuggling, and the Commissioners of Excise Inquiry have, in consequence, recommended that the duties should be reduced on hard soap to 1*d.* per lb., and on soft to ½*d.* per lb.; and that they should be extended to Ireland. The adoption of these suggestions would be a material improvement. The duty would then be so light, that its pressure would be but little felt even by the poorest classes; the temptation to direct smuggling would be greatly lessened, while all that indirect smuggling that takes place in the trafic between Great Britain and Ireland would be completely obviated. The total repeal of the soap duty would be a popular measure; but, as a large amount of revenue must be raised, we are not of the number of those who think it should be abandoned. The real objections to the tax have been, not that soap is an improper subject for taxation, but that the duty has been pushed beyond its proper limits, and imposed in a way to interfere with the proceedings of the manufacture, and to encourage fraud.

The *candle manufacture* may be considered in connection with that of soap, with which it is closely allied. The consumption of candles is immense. In 1829, when they were subject to an excise duty, there were produced in Great Britain, and brought to charge, 115,156,806 lbs. tallow candles, 746,052 lbs. wax do., and 303,683 lbs. spermaceti ditto. But, from the facility with which candles are made at home, many, no doubt, were clandestinely manufactured. The excise duty on candles was repealed in 1831; and the consumption, influenced partly by this cause, and partly by the increase of wealth and population, may at this moment be safely estimated at 150,000,000 lbs. Taking their price, inclusive of wax candles, at a rough average, at 7*d.* per lb., their total value will be 4,375,000*l.*

Considerable quantities of soap and candles are exported, especially to the West Indies and the British colonies in North America and of the exports of both articles, in 1834,

'he business of refining sugar is principally
pool, and Bristol. Many eminent chemists
perfect the process, which has, in conse-
mproved. A drawback is allowed on the
r refined for exportation; and it has long
awback exceeds the duty, and that but for
rts of refined sugar would be but incon-
e matter would appear to be confirmed by
efining of foreign sugar in bond has been
little use has been made of the privilege.
making up returns to Parliament, to reduce
into raw sugar, by allowing 34 cwt. of the
But the export of sugar is thus made to
ally is; for though 34 cwt. of raw may be
. of refined sugar, the whole of the molasses
(about 13 cwt.) is consumed at home.

ned Sugar in 1832, 1833, and 1834, specifying the
was sent, and the Quantity and Value of that sent

	1832.		1833.		1834.	
	Quantities.	Declared Value.	Quantities.	Declared Value.	Quantities.	Declared Value.
	cwts.	L.	cwts.	L.	cwts.	L.
	9,240	25,937	1,653	4,309	5,504	15,007
	29	81	307	800	76	205
	363	1,023	717	1,862	406	1,918
	532	605	90	236	1,081	11,568
	77,420	165,516	21,784	51,893	25,842	56,497
	177,110	369,144	46,803	83,507	51,005	68,301
	3,647	9,550	812	1,267	2,245	2,475
			-	-	142	136
	23	65	36	77	4,235	11,140
	-	-	17	43	4,740	12,480
	411	782	1,146	2,876	963	2,672
	-	-	2	6	596	1,618
	490	1,381	2,251	5,871	5,854	16,904
	10	28				
	4,830	13,127	3,684	8,496	7,809	17,846
	130,900	328,973	98,984	246,238	184,510	446,948
	4,965	12,076	19,176	18,673	16,004	34,718
	6,136	15,987	4,300	11,101	9,435	24,686
	15,803	39,564	20,239	50,050	42,776	111,539
	321	906	51	133	1,328	3,607
	1	3	17	45	546	1,485
	101	285	-	-	49	76
	365	723	320	628	284	627
	214	600	529	1,373	602	1,601
	30	85	19	49	60	129
	130	348	382	948	461	1,202
	699	1,645	816	1,959	289	652
					17	46
	8	23	30	42	7	117
	4	11	1	3	5	11
ind,	1,461	3,869	2,021	5,042	2,960	7,590
	1	4	6	17		
	-	-	-	-	1	3
	14,022	28,822	22,704	46,637	17,611	38,069
	3,009	7,264	4,228	9,722	4,018	9,453
	37	90	70	165	107	244
	126	265	58	140	114	285
	1,404	3,928	200	503	249	650
	11	30	1	2	12	33
	1	3	-	-	1	4
	-	-	10	26	25	69
	-	-	131	287	504	1,368
	4	9	4	10	4,015	10,789
	7	17	2	5	17	47
and	2,179	6,033	3,097	8,051	4,509	12,456
	455,847	1,038,789	245,698	563,092	401,044	916,391

4. COACHES.—Owing to the vast number of public and private coaches, and other descriptions of carriages, used in Great Britain, and the severe wear and tear to which many of them are exposed, their manufacture affords employment to a very considerable number of individuals. Formerly all carriages made for sale paid a certain duty; and in 1812, when it existed, it was paid upon 1,531 four-wheeled carriages, 1,701 two-wheeled do., and 407 taxed carts. But besides the repeal of this duty, the annual duties charged on four-wheeled and two-wheeled carriages, particularly the latter, have been very materially reduced; and the number of them in use has, partly in consequence of this reduction, and partly of the increase of wealth and population, been very greatly increased since 1812: so much so, that we are well assured they are at present fully twice as numerous as they were then. In 1830, duty was charged on 25,992 four-wheeled carriages belonging to private parties; 6,983 post chaises and other carriages let to hire with horses; 3,138 public stage coaches, exclusive of mail coaches; and on 48,370 two-wheeled carriages. The duty on taxed carts, *with springs not metallic*, and on four-wheeled pony carriages, was repealed in 1825.

Coaches and all sorts of carriages are made at most of the considerable towns in the country; but by far the greatest number, as well as those of the best workmanship and most fashionable shapes, are made in London. The trade of a coach currier is hardly carried on any where except in the metropolis. Of 5,397 males, of 20 years of age and upwards, employed in the coach-making business in Great Britain, in 1831, 5,030 belonged to England, 44 to Wales, and 323 to Scotland: of those belonging to England, nearly a half, or 2,167 were in the metropolis. The number of coach-owners, drivers, grooms, &c., of 20 years of age and upwards in Great Britain, during the same year, was 10,514; of which England had 8,557, Wales 266, and Scotland 1,691.—(*Population Returns*, vol. ii. p. 1044.)

5. CABINET-MAKERS' GOODS.—The manufacture of cabinet-maker's goods is largely carried on in every part of the country; but especially in the metropolis, where the best and most beautiful articles of furniture are made. There are no means of forming any estimate of the value of the goods annually produced by cabinet-makers; but it is abundantly certain that it must be very great. According to the official returns, of 21,774 males, of 20 years of age and upwards, employed as cabinet-makers in Great Britain, in 1831, 17,646 belonged to England, 465 to Wales, and 3,663 to Scotland.

Exclusive of the above there are a vast number of manufactures, such as those of gunpowder, starch, dyeing and bleaching stuffs, colours, vinegar, furs, &c., &c., which it is unnecessary to particularise.

Such is a short sketch of the more important statistical details connected with the principal manufactures carried on in the country. We are sensible that it is in many respects defective; but we believe that it will, notwithstanding, be found to afford a more complete and accurate view of the progress and present state of these manufactures than is to be met with in any other publication.

It is to be regretted that there are no means of forming any estimate of the real value of the manufactured articles annually produced in Great Britain and Ireland. But the previous statements show that it must be quite immense. There are, in fact, but few departments in which we are able to obtain a tolerably close approximation to the gross value of the articles produced; and even though we could do this in them all, the results would not be of so much value as is commonly supposed; and might, indeed, unless subjected to farther examination and analysis, lead to the most erroneous conclusions. It is supposed by many that whatever may be the annual value of our manufactured goods, we shall, by adding it to the annual value of our agricultural products, get the total value of the new commodities annually produced in the empire. But this is an error. The value of the British wool, for example, employed in the woollen manufacture, may amount to from 5,500,000*l.* to 6,000,000*l.* a year; and forms an item of this amount in estimating the value of the manufacture. It is plain, however, that if we include this wool in any estimate of the agricultural produce of the country, we must exclude it from that of its manufactured produce; for, if we do not, it will be reckoned twice over! The same thing happens in a vast variety of cases. Three fourths of the value of malt, for instance, consists of the value of the grain out of which it is made; so that in forming any estimate of the new products annually brought to market, we must either reckon the value of malt under deduction of the value of the raw grain, or else exclude the latter from the estimate of agricultural products. Again; very many manufactured articles, such as beer, spirits, coaches, &c. consist principally of other manufactured articles, the value of which must necessarily be deducted to learn the new or additional value which the peculiar manufacture adds to the wealth of the country. Hence the extreme difficulty of forming any fair estimate of the real value of many species of manufactures. It is always a difficult matter to learn their gross value. That, however, is really but the smallest part of the difficulty to be overcome. It is farther necessary, in order to specify the nett addition made by any manufacture to the mass of valuable products, to detach from it the value of the raw produce, and of other manufactured articles embodied in it. But in many, perhaps most, cases this would be all but impossible; and nothing would be gained by laying before the reader conjectural estimates that might be as often erroneous as the reverse, and from which, consequently, he could derive no real instruction.

END OF THE FIRST VOLUME.

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PART I., Price 2*s.* 6*d.*,

OF THE

PICTORIAL EDITION OF SHAKSPEARE.

Dr. Drake, in the Prefatory Essay to his "Memorials of Shakspeare," points attention to a want which every general reader has long felt:—"It is devoutly to be wished that an edition of Shakspeare were undertaken, which, whilst in the notes it expunged all that was trifling, idly-controversial, indecorous, and abusive, should, at the same time, retain every interesting disquisition, though in many instances re-modelled, re-written, and condensed; nor fearing to add what farther research, under the guidance of good taste, might suggest.'

Such an edition of Shakspeare as Dr. Drake has here so judiciously described does not exist. We have to choose between those editions which give the text alone, with perhaps a few glossarial notes, and those whose ponderous commentaries are in many respects worthless, except as materials for a more goodly structure. The commentators, for the most part, worked with little sense of proportion; and thus overlooked many matters of real utility, and elevated many insignificant things into a ludicrous importance. Their worst fault was, that they were perpetually endeavouring to lower their author to their own standard; destroying his exquisite rhythm, to suit their own notions of metrical harmony; and, in the same temper with which his plots have been changed to conform to the vulgar demand for stage effect, quarrelling with the conduct of his incidents or the fancied inconsistencies of his characters. Shakspeare demands a rational edition of his wonderful performances, that should address itself to the popular understanding, in a spirit of enthusiastic love, and not of captious and presumptuous cavilling;—with a sincere zeal for the illustration of the text, rather than a desire to parade the stories of useless learning;—and offering a sober and liberal examination of conflicting opinions amongst the host of critics, in the hope of unravelling the perplexed, clearing up the obscure, and enforcing the beautiful, instead of prolonging those fierce and ridiculous controversies, which, always offensive, are doubly disagreeable in connexion with the works of the most tolerant and expansive mind that ever lifted us out of the region of petty hostilities and prejudices. The school of Steevens and Malone has, for all enlarged purposes of criticism, been overthrown by that of Schlegel and Göethe. In Germany, Shakspeare has been best understood, because he has there been most ardently loved. Coleridge, and Lamb, and Hazlitt, and others amongst ourselves, have taught us to measure Shakspeare by a juster standard than that "of the dwarfish commentators, who are for ever cutting him down to their own size." But we have no complete English edition of our poet, in which the spirit of this higher criticism has been embodied, or in any degree has found a place.

But, in addition to the *literary* illustrations of Shakspeare that may be supplied by judicious research and careful selection, there is a vast storehouse of materials yet unemployed, that may, with singular propriety, be used for adding both to the information and the enjoyment of the readers of our great poet — we mean *Pictorial* Illustrations. We have *embellished* editions of Shakspeare, out of number, that attempt to represent the incidents of his scenes, and translate his characters into portraits for the eye — with greater or less success; — but we have no edition in which the aid of art has been called in to give a distinctness to the conceptions of the reader by representing *the* Realities *upon which the imagination of the poet must have rested.* Of these Pictorial Illustrations many, of course, ought to be purely antiquarian; — but the larger number of subjects offer a combination of the beautiful with the real, which must heighten the pleasure of the reader far more than any fanciful representation, however skilful, of the incidents of the several dramas. Look, for example, at the *localities* of Shakspeare's scenes, and trace how many sources of pictorial illustration this class alone will open. We will hastily run through them:—Verona and Milan; Windsor, in the time of Henry IV.; Illyria; Vienna; Messina; Navarre; Venice; the Forest of Arden; Marseilles and Florence; Padua; Ephesus; Sicily, and Bohemia. Such is the great variety of locality which the *Comedies* alone supply for Pictorial Illustration; and these localities necessarily include the public and domestic *Architecture* and the *Costume* of the places represented at the periods of the action. In the *Histories* these localities, and their subordinate illustrations, assume even a higher interest: — Northampton, Angers, St. Edmundsbury, in the time of John; Coventry, London, Bristol, Flint Castle, Windsor, Pomfret Castle, in the time of Richard II.; London, Rochester, Warkworth, Bangor, Windsor, Shrewsbury, Coventry, in the time of Henry IV.; Kenilworth, Southampton, London, Harfleur, Agincourt, Troyes, in the time of Henry V.; Westminster, London, Orleans, Rouen, Paris, Bordeaux, Saint Albans, Bury, Wakefield, York, Towton, Coventry, Tewkesbury, in the time of Henry VI.; Westminster, Pomfret Castle, Baynard's Castle, Salisbury, Tamworth, Bosworth, in the time of Richard III.; London, Westminster, Kimbolton, in the time of Henry VIII. The localities we have thus imperfectly enumerated, and the architecture and costume in connection with them, if given with perfect fidelity, would open new trains of thought of the most pleasing kind to the readers of Shakspeare, and make the scenes of his spirited *Histories* live again in complete truth. Lastly, in the *Tragedies*, we have almost as varied a source of local interest, in connection with the period of the action: the Rome of Coriolanus and of Julius Cæsar; the Syria, and Greece, and Egypt of Antony and Cleopatra; the Athens of Timon; the Ancient Britain of Cymbeline and Lear; the Verona and Mantua of Romeo and Juliet; the Elsinore of Hamlet; the Venice and Cyprus of Othello; and the Scotland of Macbeth. It is remarkable that, of all the dramas of Shakspeare, the "Tempest" is the only one of which the locality is undefined; and this indistinctness of position constitutes a singular propriety in the conduct of this glorious exhibition of supernatural agency. But even, in this play, the characteristics of particular spots of the Island of Prospero are most clearly described; and are, therefore, fit for the class of local illustrations. The richness, however, of the local illustrations of Shakspeare, and their accessories, will be most felt in the Historical Plays; and the imagination of the artist must be dull indeed, who, when he has to deal with subjects connected with the Classical and the Feudal Ages, shall not, out of the mass of authentic materials presented to him, produce combinations of the highest picturesque excellence.

But Shakspeare is almost inexhaustible in many other of the most delightful sources of pictorial illustration. Look, for example, at the variety and richness of his images derived from *Natural History*, —his flowers, his insects, his birds, his quadrupeds. Again, his *mythological* allusions and personifications suggest the introduction of many illustrations supplied by the exquisite remains of ancient Art. We have already alluded to the class of *antiquarian subjects*, of which Costume forms only a part. The variety of these will be appreciated, when it is considered that Shakspeare deals with all conditions of men, from the king to the beggar, and that in his page

"each change of many-coloured life"

supplies almost exhaustless materials to illustrate the history of mankind, from objects with which the Poet was himself familiar, as belonging to his own times, or with which he was acquainted through books and pictures. In the Historical Plays, the Portraits of the real Personages of the Drama — the great Captains of Rome and the Kings of England and France, with their warriors and ministers, — would form a most interesting class of illustrations. Certainly no works ever presented such rich materials as Shakspeare's Dramas for the most beautiful embellishments that should at the same time be strictly illustrations; — and the wonder is that these materials are yet untouched.

The Pictorial Shakspeare now offered to the public is intended, as far as zealous industry and a liberal expenditure can accomplish, to realise the idea which we have thus described.

The *Notes* will embrace every subject that appears necessary to be investigated for the complete information of the reader. The almost endless variety of objects presented in the text will call for the best assistance that the Editor can procure from gentlemen conversant with particular departments. The *various readings* and the *glossarial notes* will be presented at the foot of each page; whilst the fuller annotations will be appended to each act. An *Introductory Notice* will be prefixed to each Play, which will point out, — 1, the Historical Facts, — the real or imaginary Incidents, — and the complete Stories or detached passages in works of Imagination, — from either of which the plot of the drama, or any portion of it, is supposed to be derived; — 2, the evidence which exists to establish the date when the play was first acted. At the end of each Play *Supplementary Notices* will be given, the object of which will be to exhibit, 1, the *Period* and the *Locality* of the Drama, with an account of the materials from which the Local Illustrations have been derived; — 2, The *Costume* of the Drama, in which Notice will be introduced Wood-cuts, copied from ancient MSS. or Books, that may exhibit the authentic Costume of the place and of the period which the Poet had in his mind; — 3, the *Music* of the Drama, in which the original Airs of Shakspeare's exquisite songs will, as far as possible, be given, — with an account of the later Musical Compositions that have been adapted to the Poet's words. An examination of the various *Critical Opinions* upon each Play will close the Supplementary Notices; and, in this portion of the work, it will be the duty of the Editor, while he avoids any obtrusive exhibition of his own opinions, to analyse and present in one view whatever is valuable in the multifarious criticism upon Shakspeare, — and especially to exhibit those views (no edition of Shakspeare having yet presented such to us) which do justice not only to the surpassing beauty of detached passages of our great Dramatist, but which point out the consummate judgment which he displays in the conduct of his Story, — his wonderful Method, — his exquisite Art, — the imperishable freshness of his Scenes, — the unerring Truth of his Characters. The materials for such an Analysis are ample. Lastly, a *Life of Shakspeare*, which will refer to all the new materials that have been so assiduously collected by recent writers, will complete the work.

It is necessary to say a few words as to the *text* that will be adopted in this edition. It is not within the scope of this design to travel again over the ground which has occupied so many laborious editors. Malone considered the text settled; and he has certainly, by a pretty strict adherence to the folio of 1623, got rid of an enormous mass of corruptions which the witty and the dull had, alike, heaped upon the great dramatist, who had done so little towards preserving his works, through the immortality of the press. We shall, therefore, take the copy now commonly used. But we shall institute a careful comparison between that text and the first folio; and we shall indicate the variations from that edition, which Horne Tooke described as the only one worth regarding, in all cases where the substitutions are beyond the character of corrections of typographical errors.

In the *Design and Engraving* of the *Wood Cuts* the most eminent artists will be employed. The same desire will preside over the artistical as the literary department — namely, to produce an edition of Shakspeare that, whilst it may be more interesting to the general reader, as well as more attractive as a work of art, than any which has yet been published, shall aim at the most complete accuracy; and thus offer a not unworthy tribute to the great Poet, which may be acceptable, not only to England, but to every country where his works are welcomed as the universal property of the civilised world. We have *sufficiently* described the nature of the Pictorial Illustrations which will constitute the peculiar feature of this edition. Imaginative embellishment will, however, be employed, in a greater or less degree, in all cases where it will best harmonise with the character of the particular drama. In the "Midsummer Night's Dream," where the scene belongs to the age of Classical Fable, and the principal actors are of the Fairy Mythology, the embellishments must of necessity be chiefly fanciful. In a few other plays, such as the "Tempest" for example, the same principal of illustration must partially prevail; and in all the plays, some one or more designs having reference to the scenic action, will be introduced, to give a direction to the conceptions of the reader. The designs for this class will be chiefly furnished by Mr. Harvey, who has evinced the richness and elegance of his fancy in the new edition of the Arabian Nights. Mr. Harvey will also furnish a Border for the Title of each Play, in which the *Characters and the Story* of the Drama will be embodied; but in these designs, the most exact propriety of costume and other accessories will be preserved.

It remains for us to state that *each Play will form a complete Part*, so that the Plays will occupy thirty-seven Parts. The entire work, including Shakspeare's Sonnets and other Poems, and a *Life of Shakspeare*, with local Illustrations, as well as other introductory matter, will extend to *Forty-two Parts*, forming Six splendid Volumes in Royal Octavo, which may, if agreeable to the purchaser, be bound in three Volumes, so that the classes of Comedies, Histories, and Tragedies, may be kept separate. The Monthly Publication will be regularly continued till the completion of the work.

London: Charles Knight and Co. 22. Ludgate-Street.